VERSION 8

CENTRAL POINT PC TOOLS™ FOR DOS

Volume 1

- Getting Started
- PC Tools Desktop
- Data Recovery and System Utilities

Central Point Software INC®

CENTRAL POINT
PC TOOLS

Volume 1

Getting Started

PC Tools Desktop

Data Recovery and System Utilities

Central Point Software INC

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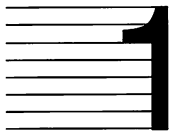

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Before You Begin

Before using PC Tools, you should be familiar with the common DOS commands and with the concepts of files, file names, extensions, and directories. If you need to know more about these, please refer to your DOS manual.

Here's what you'll find in this chapter:

- **Registering PC Tools** describes how to register your PC Tools programs.
- **System Requirements** describes the minimum system requirements you need to run PC Tools Version 8.
- **Before Calling for Technical Support** describes the information we need from you before you call for technical support.

If you are not sure how to respond to a prompt during installation, you can always press F1 for help, or quit Install and come back later. You can also run Install again whenever you want to add programs or change your configuration.

Part 1 Getting Started explains the basic information and techniques you need to start using PC Tools.

Registering PC Tools

If you purchased PC Tools from a dealer, please take a moment now to fill out and send in the registration card. If you purchased PC Tools directly from Central Point Software, you are already registered as an owner. Being a registered owner entitles you to technical support and lets us tell you about product updates. When PC Tools is updated, all registered owners are notified by mail and can purchase the update at a greatly reduced price.

NOTE *Completing the registration card is crucial for keeping your virus protection up-to-date. Registered owners automatically receive information to update Central Point Anti-Virus to detect newly discovered viruses. For a complete description of the services you receive as a registered owner of PC Tools, see the* Central Point Software Registration and Support Card *included in the box.*

System Requirements

PC Tools utilities for DOS work with the following:

- All models of IBM PS/2, PC, XT, AT, and most IBM-compatible computers.
- DOS Version 3.3 or later.
- 512K of memory; 640K is recommended.
- At least one floppy disk drive and a hard drive.
- To use PC Tools from within Microsoft Windows, you'll need Windows Version 3.x.
- To use Central Point Commute, or the electronic mail or telecommunications features in Desktop Accessories, you need a Hayes-compatible modem.

See the *Microsoft Windows User's Guide* for Windows system requirements. For more information about using PC Tools with Windows, see the *Tips for Windows Users* chapter in later in this manual.

NOTE *Commute requires at least 640K of memory. The two PCs must be connected using a local area network (LAN), modem, or null-modem cable—see* Part 3 Commute *in Volume 2 for details.*

Mouse Requirements

PC Tools utilities perform optimally with a mouse. The mouse driver (the program required to use a mouse) must be loaded from your CONFIG.SYS file or before PC Tools programs in your AUTOEXEC.BAT file. See your mouse documentation for more information.

PC Tools supports the following mouse drivers:

- Microsoft, Version 6.14 or later
- Logitech/Dexxa, Version 3.4 or later

NOTE *Some of the most common mouse problems are caused by an incompatible mouse driver. Make sure you are using a compatible version.*

Fax Board Requirements

To use Desktop with a fax board, you'll need to install the fax board and software before you configure Desktop. You'll also need to create the directory where you want to store fax files. Desktop supports these fax boards:

- Connection CoProcessor (Intel Corp.)
- SatisFAXtion Board (Intel Corp.)
- SpectraFax (SpectraFax Corp.)

Network Requirements

If you are a network administrator, you can install PC Tools utilities on a Novell NetWare server (Version 2.12 or later) or on an IBM PC LAN server. You then have several options for configuring the use of the programs:

- You can let users run the programs from any workstation on the network that has access to the files on the server.
- You can install PC Tools on the network server and let users install and configure their own workstations.
- You can also let users install copies of PC Tools programs automatically from the network server to workstation hard disks, without having to handle floppy installation disks or interact with the program.

NOTE *You must purchase as many copies of PC Tools as there are network users of PC Tools, or contact us to purchase a site license. See the license agreement for details.*

Only a network supervisor should install PC Tools on a network server. Once a complete copy of PC Tools has been installed on the network server, additional copies may be customized and installed on local workstations, using Batch Install, a batch file installation program for network supervisors. See the *Installing PC Tools on and from a Network* chapter for information.

Before Calling for Technical Support

If you need technical support for PC Tools, please read everything relevant to the problem in the manuals and the online help. Then read the *Central Point Software Registration and Support Card* and complete the Technical Support Checklist in it before contacting us. This helps us to pinpoint and solve your problem more quickly.

Installing PC Tools

If you are installing PC Tools on your personal computer or someone else's, follow the procedures in this chapter.

If you are a system administrator responsible for configuring and installing PC Tools for users at your company's site, see "Custom Installation" later in this chapter and the *Creating Customized Installation Floppy Disks* chapter later in this part. If you are installing PC Tools for network users, see the *Installing PC Tools on and from a Network* chapter later in this part.

Here's what you'll find in this chapter:

- **Before You Install** explains where to go in the manuals if you need to recover data now. The section also reminds you to make backup copies of the installation disks and to have a blank disk for the emergency disk. Finally, the section describes the modifications Install makes to your system.
- **Quick Install** explains the quickest, most automatic way to install PC Tools.
- **Installing Step-by-Step** describes the options you can choose during installation.
- **Custom Installation** describes each PC Tools program and how to select and install only those you want.
- **Removing PC Tools Programs** explains how to remove (uninstall) the product.
- **After Installation** describes the configuration of RAMBoost and reminds you to read the Read Me file and to test the emergency disk.

Before You Install

Before you install PC Tools, perform any necessary data recovery. Then, make backup copies of the disks and know some details about your system.

If You Need to Recover Data Now

WARNING Do not install PC Tools on your hard drive if you need to recover data on that disk. Doing so may overwrite the information you want to recover. If you have another hard drive, install PC Tools to that drive instead, or run the PC Tools recovery program from the original floppy disk listed in the following table.

Refer to *Part 3 Data Recovery and System Utilities* for details on using each of the Data Recovery utilities.

To Do This	Insert the Disk Labeled	Type This Command	Where to Go for More Information
Recover a deleted file	Undelete	UNDEL Enter	The *Undelete* chapter in this volume
Eliminate a virus	Anti-Virus	CPAV Enter	*Central Point Anti-Virus* in Volume 2
Unformat a hard disk	Unformat	UNFORMAT Enter	The *Unformat* chapter in this volume
Repair a disk	DiskFix	DISKFIX Enter	The *DiskFix* chapter in this volume
Recover a damaged Lotus 1-2-3, Symphony, Paradox, WordPerfect, Rbase, or dBASE file	FileFix	FILEFIX Enter	The *FileFix* chapter in this volume

Make Backup Copies of the PC Tools Disks

Use the DOS DISKCOPY command to make backup copies of the original PC Tools disks, then use the backup copies to install. Make sure you use the same disk media size when copying disks. See your DOS manual for instructions on using DISKCOPY.

NOTE *You should use DISKCOPY rather than COPY *.* because DISKCOPY copies the volume labels—and you won't be able to install from the backup copies unless they have the same volume labels as the originals.*

Have a Blank High-Density Disk for the Emergency Disk

Get a blank, high-density floppy disk for your A drive to create an emergency disk during installation. This emergency disk can help you recover if a virus infects your boot sector or partition table or your disk won't start for any reason. The emergency disk must be created in your A drive because your B drive is generally not a bootable drive.

Things You Need to Know to Install

Make sure you know these things before you start installing:

- The directory where you want to install PC Tools.
- The type of monitor you are using: color, monochrome, LCD, or black and white.

If you want to perform a Custom Installation, you need to know these additional two items:

- If you use Windows, the directory where your Windows files are installed.
- Which PC Tools applications you want to install. See "About the Applications" later in this chapter for a brief description of each application. (Or you can press F1 during installation.)

What Install Does

- Creates a PC Tools program group in Windows.
- Modifies Windows system files (WIN.INI, PROGMAN.INI, and, if CP Backup or Commute is installed, SYSTEM.INI) so PC Tools programs can work correctly with Windows. Install saves the original files with a .CP8 extension in case you need them. For Commute, Install places new keyboard, mouse, and display drivers in your SYSTEM.INI file. These drivers allow you to control, in a Commute session, another PC running Windows.
- Copies and configures the paths of .PIF files provided for any PC Tools DOS program installed in the Windows directory. These .PIF files make it easy to use PC Tools programs in Windows.
- Modifies the PATH statement in AUTOEXEC.BAT to include the new \PCTOOLS directory, allowing DOS to locate the PC Tools files when needed.
- Optionally renames the DOS UNDELETE command to UNDELET! so that when you type UNDELETE at the DOS prompt, you run PC Tools Undelete instead.

- Optionally renames the DOS FORMAT command to FORMAT! so that when you type FORMAT at the DOS prompt, you run PC Format instead.
- Optionally converts Norton Backup and Fifth Generation FastBack setup files for use with Central Point Backup.
- Optionally converts Fifth Generation Direct Access menus for use with PC Tools Desktop.
- Optionally schedules Central Point Backup, Compress, DiskFix, or CP Anti-Virus events.
- Creates directories for the PC Tools files:

  \PCTOOLS (or a name you entered) contains the main executable files. These have .EXE, .COM, and .BAT. Install adds this directory to your PATH.

  \PCTOOLS\SYSTEM contains program-related files that are not executable or should not be changed. These include .OVL (overlay), .HLP (help), .PIF, .DLL, .MSG and other miscellaneous files.

  \PCTOOLS\DATA contains files that a user may change—configuration, setup, sample, and any files that a user creates. Install sets the PCTOOLS environment variable to this directory.

  \PCTOOLS\OLDPCT contains old PC Tools configuration files, if you already have a version of PC Tools installed.

  When you use Email, other subdirectories are created to hold your Email files: \INBOX, \OUTBOX, \SENT, and if you use the network scheduler, \APPT.

  When you install RAMBoost on a computer using Stacker software, a \RAMBOOST directory is created on the unstacked drive, and all RAMBoost files are copied to it. The stacker drive is not available until the stacker device statements are executed, and any files referenced before the stacker statement, such as RAMBoost, must remain on the unstacked drive. See your Stacker documentation for more information.

If you are a system administrator responsible for installing multiple copies of PC Tools on users' computers, once you have installed PC Tools on your hard disk, you can create multiple sets of customized installation floppy disks. For more information, see the *Creating Customized Installation Floppy Disks* chapter near the end of this part.

If you are a network administrator, you can install PC Tools on a network server for shared use by users, or let users install their own copies of PC Tools from the server to their workstations. For more information, see the *Installing PC Tools on and from a Network* chapter near the end of this part.

Quick Install

If you do not need to recover any data before installation, or if you are familiar with installation programs and want the quickest and most automatic installation, without reading the manual, follow this procedure and skim the rest of the chapter. If you prefer to be guided through installation, follow the procedure in "Installing Step-by-Step."

NOTE *Once the programs have been installed, if you need to make any adjustments to your original configuration, use PC Config's Startup Programs command (explained in the* Configuring PC Tools Startup Programs *chapter). If you ever need to recopy PC Tools program files or copy additional programs, start Install from the original installation disks.*

1. Insert the installation disk into a floppy drive.

   This example uses drive A. If you are using a different drive, substitute that drive letter for A.

2. From DOS, type

   `A:INSTALL` Enter

   Install scans memory for viruses. If the program finds a virus in memory, it prompts you to remove it .

   You can press Esc to cancel the virus scan, then choose **Yes**.

3. Follow the instructions on the screen.

   The Install program presents a series of screens that ask you questions about how you want to install PC Tools. If you need help at any point during installation, press F1.

NOTE *Do not try to install PC Tools by copying files directly from the floppy disks. Most of the program files are compressed to save disk space, and Install must decompress them before they can be copied.*

Installing Step-by-Step

The installation process is "smart" enough to analyze the existing configuration on your system and ask you questions based upon that configuration. All of the dialog boxes that can appear are explained in this section for reference; depending upon your system, you may not see every dialog box.

NOTE *Once the programs have been installed, if you need to make any adjustments to your original configuration, use PC Config's Startup Programs command (explained in the* Configuring PC Tools Startup Programs *chapter). If you ever need to recopy PC Tools program files or copy additional programs, start Install from the original disks.*

1. Insert the installation disk into a floppy drive.

   This example uses drive A. If you are using a different drive, substitute that drive letter for A.

2. From DOS, type

   `A:INSTALL` Enter

   Install scans memory for viruses. If the program finds a virus in memory, it prompts you to remove it.

   You can press Esc to cancel the virus scan, then choose **Yes**.

Preliminary Install Dialog Boxes

Install displays a series of dialog boxes that allow you to

- Choose the display options that look best on the monitor you are using.
- Personalize your copy of PC Tools.
- Exit from the program, if necessary, to recover data from your hard disk before files are copied onto it.

Choosing an Installation Type

For information about the programs included in any installation type, press F1.

▶ Choose one of the following installations:

Full Installation: Installs every PC Tools program onto your computer's hard drive. See "About the Applications" later in this chapter for a description of each utility.

Minimal Installation: Installs only the most frequently used PC Tools programs. If you want to make your own selections, choose Custom Installation, described in "Custom Installation" later in this chapter.

Laptop Installation: Installs the PC Tools programs that are most appropriate for laptop computer users. If you want to make your own selections, choose Custom Installation, described in "Custom Installation" later in this chapter.

Custom Installation: Installs your own selection of PC Tools programs, or if you are a network administrator, you can use this command to install PC Tools on a network server. See the "Custom Installation" section for details.

Specifying the Installation Directory

- Specify the directory where you want to install PC Tools utilities.

  Install provides C:\PCTOOLS by default, but you can enter a different disk and directory. If the directory doesn't exist, Install makes the directory.

  Install notifies you if it detects an existing version of PC Tools in the directory you specify.

  - Choose **OK** to overwrite the installed version.

    or

    Choose **Change directory** to specify another directory for the PC Tools files.

    If you specify a different directory than an earlier PC Tools installation, make sure you copy configuration files (such as Central Point Backup setup files, Commute scripts, or Desktop Accessories macros) to the new directory so you can use them.

If Install Finds Duplicate Central Point Software Products

Install tells you if it finds copies of other Central Point Software products. To avoid using disk space on duplicate programs, you may

- Choose **Exit** to remove the other Central Point Software programs.

  or

  Choose **Previous** to select another directory for installation or to perform a Custom Installation.

  or

  Choose **OK** to continue.

Install checks your hard disk integrity, collects hard disk data, and asks if you want to start copying files.

If Install Finds a Problem with the Destination Disk

If Install finds a problem during its analysis of your hard disk, a dialog box displays information about the problem and asks for the floppy disk containing DiskFix.

1. Insert this disk in your floppy drive.
2. From DOS, type

   `DISKFIX` Enter

3. Fix any problem before you continue with installation.

When DiskFix is finished, it displays the DOS prompt. Run Install again and start over.

NOTE *If you do a Full, Laptop, or Minimal installation into a directory with a previous version of PC Tools, the following user-specific PC Tools files are saved in the \OLDPCT subdirectory: configuration files (.CFG), macro files (.PRO), spelling dictionary (DICT.SPL), and script files (.SCR), Central Point Backup setup files (.SET), the PHONE.TEL file, other common data extensions (for example, .BAK, .TXT, .SAV). If any of these files are necessary, copy them into the PCTOOLS\DATA directory. If you need to perform any subsequent Version 8 installations into your PC Tools directory, \OLDPCT is not created.*

Copying Files

Install displays its progress as it copies programs. Install prompts you to insert each disk as required.

▶ To stop the installation at any time, press Esc.

After you copy all the program files, Install asks if you want to create an emergency disk.

Creating an Emergency Disk

The emergency disk is a valuable tool for recovering data, restoring your system in case of a hard disk crash, or for diagnosing and troubleshooting TSR conflicts and other system problems.

You need a high-density floppy disk for your A drive to make an emergency disk.

NOTE *Although you can make an emergency disk with low-density disks, Central Point Software recommends that you use the largest media size you have for your emergency disk. The larger the disk, the more recovery files it can contain. You need at least 1 MB of disk space to contain all the emergency disk recovery files. If you use a smaller disk, then Install copies a subset of files.*

The following procedure shows you how to create an emergency disk during installation. Anytime you need to create an emergency disk or update your emergency disk you can do so by choosing **Build Emergency Disk** from the Tools menu in PC Tools Desktop, or from DOS, by typing

```
EDISK Enter
```

For more information about the contents of the emergency disk and how to create, update, or configure it, see the *Build Emergency Disk* chapter in *Part 3 Data Recovery and System Utilities* in this volume.

1. When Install asks if you want to create an emergency disk, choose **OK**.

   The emergency disk program performs a quick analysis of your system to determine what files to copy, then the emergency disk window appears.

2. Insert a floppy disk in drive A.

3. Choose **Create Disk.**

   The Build Emergency Disk utility analyzes the floppy disk to determine its size and whether it is formatted. If the program finds any files on the disk, it asks if you want to erase them or use another disk.

   The program formats the disk. It then copies DOS system files, PC Tools data recovery programs, device drivers, simple AUTOEXEC.BAT and CONFIG.SYS files, and other critical files containing the latest information about your system. For a complete description of the contents of the emergency disk, see the *Build Emergency Disk* chapter in *Part 3 Data Recovery and System Utilities* in this volume.

   If there isn't enough room on the floppy disk for all the files, the Build Emergency Disk utility copies the most important files to create a usable emergency disk.

   The minimum configuration (for a 360K disk) contains the following: AUTOEXEC.BAT, CONFIG.SYS, COMMAND.COM, PARTNSAV.FIL, IO.SYS, MSDOS.SYS (or the PC DOS equivalents), and all the files for running DiskFix.

   The program then notifies you that it is finished and provides some instructions for taking care of the emergency disk.

4. Choose **OK** to dismiss the dialog box, then choose **Exit** to continue with installation.

   You can test the emergency disk to make sure it works after you finish installing. See "After Installation" later in this chapter.

Renaming MS-DOS Commands

You can rename two MS-DOS commands—FORMAT and UNDELETE—to help you recover data more easily.

Renaming MS-DOS FORMAT

If you installed PC Format, a dialog box asks if you want to use PC Format instead of MS-DOS Format. When you use PC Format to format hard or floppy disks, you can recover data more easily from the disks with the PC Tools Unformat and Undelete programs.

- Choose **OK** if you want to use PC Format instead of MS-DOS Format.

  The MS-DOS FORMAT command is renamed FORMAT! so you cannot run it by accident. Whenever you type `FORMAT` at your DOS command line, PC Format will run instead of MS-DOS Format.

  or

  Choose **Skip** if you do not want to rename MS-DOS Format.

Renaming MS-DOS UNDELETE

A dialog box asks if you want to use Undelete instead of MS-DOS Undelete. When you use Undelete, you can recover files more easily if you delete them accidentally.

- Choose **OK** if you want to use Undelete instead of MS-DOS Undelete.

  The MS-DOS Undelete command is renamed UNDELET! so you cannot run it by accident. Whenever you type `UNDELETE` at your MS-DOS command line, PC Tools Undelete will run instead of MS-DOS Undelete.

  or

  Choose **Skip** if you do not want to rename MS-DOS Undelete.

Scheduling Events to Occur

If you install Scheduler, you can schedule DiskFix maintenance, virus scans, Compress optimizations, and backups that run unattended.

This feature works with DiskFix, Compress, and Central Point Anti-Virus, without configuring the programs. However, you must create a setup file in Central Point Backup before a scheduled event will work.

Be sure to leave enough time between scheduled events. For example, if you schedule Central Point Backup to do backup at 8:00 a.m., it's unlikely that it will be done in time for a Central Point Anti-Virus scan at 8:05 a.m.

NOTE *The time you enter can be in am/pm or 24-hour format and must include a colon (:). For example, to schedule an 8 a.m. event, enter 8:00a or 08:00. For 2 p.m., enter 2:00p or 14:00.*

1. Select the programs you want to run at preset times.
2. Type the time of day you want each program to run.
3. Choose **OK** to save the settings.

   For Scheduler to launch scheduled events, you must have the memory-resident CPSCHED program installed. Choosing OK here also selects the Program Scheduler option in the configuring startup programs portion of install.

Opening Windows Scheduler Automatically

The Open Windows Scheduler Automatically dialog box gives you a chance to have Scheduler for Windows opened whenever you start Windows.

- Choose **OK** to open Scheduler automatically.

  Install modifies the LOAD line in the WIN.INI file, directing Scheduler to open when Windows starts.

Whether or not you choose to open this application automatically, at this point, Install sets up PC Tools to work with Windows. For details on what Install does, see the *Tips for Windows Users* chapter in this part.

Converting Backup Files

Install searches for setup files from Norton Backup and Fifth Generation FastBack and asks if you want to convert them for use with Central Point Backup. A dialog box shows you icons for all of your local hard drives.

1. Choose **OK** to search for Norton Backup and Fifth Generation FastBack setup files and rename any that are found.

   Install asks which drives you want to search.

2. Deselect the drives that you don't want search for Norton Backup and FastBack setup files, then choose **OK**.

   The original setup files remain unchanged. The new, converted files are stored in your \PCTOOLS\DATA directory.

Converting Direct Access Files

Install searches for Fifth Generation Direct Access menu files and asks if you want to convert them to PC Tools Desktop's format.

1. Choose **OK** to search for Direct Access menu files and convert them for use in PC Tools Desktop.
2. Deselect the drives you don't want searched for Direct Access menu files, then choose **OK**.

Configuring During Installation

When all the programs have been copied to your hard disk, you can configure PC Tools to load the startup programs of your choice. See the next chapter, *Configuring PC Tools Startup Programs* for more information.

If you're installing PC Tools on a local hard drive, you need to configure PC Tools before you try to use the programs. Configuring makes specified changes to your AUTOEXEC.BAT and CONFIG.SYS files that are necessary for the programs to work properly.

Custom Installation

Use this option if you do not want to install all of the PC Tools programs, or if you are a system administrator and are creating a customized version of PC Tools for users at your company. (If you are a system administrator, see the *Creating Customized Installation Floppy Disks* chapter later in this part.)

Custom Installation is completely flexible if you need to copy additional files for added functionality in the future. For example, if you add a tape drive to your system and then want to install the Central Point Backup tape support functions, you can run Install again, choose Custom Installation, and select only that function.

NOTE *If you have a previous version of PC Tools in the directory where you are installing, and you have not selected a particular application to be installed, the previous version of that application's files will remain.*

1. Choose **Custom Installation** from the Select Type of Installation dialog box.
2. Specify the directory where you want to install PC Tools utilities.

   Install provides C:\PCTOOLS by default, but you can enter a different disk and directory. If the directory doesn't exist, Install makes the directory.

   Install notifies you if it detects an existing version of PC Tools in the directory you specify.

   ▶ Choose **OK** to overwrite the installed version.

   or

   Choose **Change directory** to specify another directory to place the PC Tools files.

   Install checks your hard disk integrity, collects hard disk data, and asks if you want to start copying files. If disk errors are found, DiskFix is executed to fix them. When DiskFix is finished, run Install again.

Finding Duplicate Central Point Software Products

Install tells you if it finds copies of other Central Point Software products. To avoid using disk space on duplicate programs,

▶ Choose **Exit** to leave Install.

You can then remove the other Central Point Software programs and start Install again.

or

Choose **Previous** to select another directory for installation.

or

Choose **OK** to continue.

Saving Earlier Configuration Files

If you chose to install in a directory with a previous version of PC Tools, Install asks if you want to save your configuration files.

▶ Choose **Save existing configuration files** to save these files.

Install creates an \OLDPCT subdirectory and copies the following user-specific PC Tools files to it: configuration files (.CFG), macro files (.PRO), spelling dictionary (DICT.SPL), script files (.SCR), Central Point Backup setup files (.SET), the PHONE.TEL file, and other common data extensions (for example, .BAK, .TXT, .SAV).

or

Choose **Do not save existing configuration files** to overwrite these files.

Saving these files is the safest choice, as you can check to see what is copied to \OLDPCT and recover or delete it later.

NOTE *For personal computer installations, this directory is a subdirectory of the installation directory. If you are customizing for a network workstation, \OLDPCT is a subdirectory of the directory in the PCTOOLS environment variable.*

Accessing PC Tools in Windows

PC Tools Version 8 includes two Windows utilities that make it easier to use PC Tools applications with Windows. The TSR Manager lets you receive messages from Central Point DOS TSRs while in Windows. The Scheduler for Windows lets you schedule unattended backups, Central Point Anti-Virus scans, disk analysis with DiskFix, and Commute script files.

Install asks if you want to access PC Tools programs from Windows. If you do, Install creates a PC Tools group in the Program Manager.

1. Type the drive and path name where Windows is installed.

   This is the directory where your WIN.INI, SYSTEM.INI, and PROGMAN.INI files reside. Most often, the directory is C:\WINDOWS.

2. Choose **OK**.

   or

   Choose **Skip** or leave the text box blank if you do not want to install the PC Tools applications for Windows.

NOTE *If you are installing PC Tools in a network directory, and Windows 3.x is installed on the network, specify the directory where Windows is installed on the network. If you are installing PC Tools on the network, but Windows is not installed on the network, choose Skip.*

Selecting Applications to Install

When you choose to customize your installation of PC Tools, you can accept a default set of program files, or you can select your own set of PC Tools program files. A checkmark in front of a program name indicates it will be installed. The list box includes a brief description of each program. Scroll through the box to view the list.

As you select programs to install, information appears on the screen, showing how much disk space you will need to install the programs you've selected, along with the disk space left after the installation.

- To install all PC Tools programs, choose **Everything**.

  or

  1. Choose **Nothing** to deselect all programs.
  2. Choose the programs you want to install, and then choose **OK**.

To stop the installation at any time, press Esc.

Install displays its progress as it copies programs. Install prompts you to insert each disk as required. After you copy all the program files, Install asks if you want to perform the following:

- Create an emergency disk.
- Rename MS-DOS commands.
- Schedule events to occur.
- Open Windows Scheduler automatically.
- Convert Norton Backup or Fifth Generation's FastBack files for use with Central Point Backup.
- Convert Fifth Generation Direct Access files for use with PC Tools Desktop.

If you need details for any of these options, see the appropriate sections described in the "Installing Step-by-Step" section earlier in this chapter. Or you can press F1 at any time to get help.

About the Applications

This section describes each of the PC Tools applications or the specific functionality listed. For more information about the applications you can configure to run at startup, see the next chapter, *Configuring PC Tools Startup Programs*.

PC Tools Desktop

PC Tools Desktop is an easy-to-use environment that makes handling files, directories, and documents efficient and easy. PC Tools Desktop provides access to *all* PC Tools programs and their functions, along with all the critical DOS maintenance commands. Use PC Tools Desktop to copy, move, delete, view, and compare files; edit files and disks; manage directories; format disks; and launch programs.

PC Tools Desktop pulls together almost everything you need to perform your everyday computing tasks: You can set up programs to run at scheduled times; perform backups to disk, tape or network drives; check your meeting schedules and set alarms to remind you; send and receive Email; perform calculations on four types of calculators; quickly switch between programs, such as your database, spreadsheet, or word processor; scan for viruses; perform remote file transfers with Commute; and perform all the critical data recovery procedures such as disk optimization, file recovery, disk analysis and repair.

PC Tools Desktop includes a configurable menuing system that allows quick access to programs, data files, and complete menus of PC Tools programs. You can customize PC Tools Desktop for your own individual needs, such as changing menus and function keys.

NOTE to UPGRADERS *PC Shell is now PC Tools Desktop. You can access the program and use it the same way you did in Version 7. There is also a menu configuration that will display PC Tools Desktop using the same menu structure you used in PC Shell Version 7.*

Desktop Accessories

Desktop Accessories includes a text editor, an outliner, an appointment scheduler, a database program, a macro editor, and electronic mail, fax, and telecommunications capabilities, four calculators (algebraic, scientific, financial, and programmer's) all of which can be accessed from PC Tools Desktop.

NOTE to UPGRADERS *Desktop Manager is now Desktop Accessories. You can access the program and use it the same way you did in Version 7.*

Central Point Anti-Virus

Central Point Anti-Virus protects your system from over 1,300 viruses, and checks for characteristics of as yet unidentified viruses.

Detect, clean, and immunize copies the main Central Point Anti-Virus (CPAV.EXE) program for full protection and virus-scanning capabilities.

Resident monitors for continuous protection copies VWatch or VSafe, which are TSR programs that constantly search for viruses in files and other suspicious activity.

Boot sector protection copies BootSafe to scan your system memory for boot sector and partition table viruses each time you boot your computer.

Central Point Backup

Backup is a powerful and flexible program that backs up, restores, and compares your hard disk data. Multiple-drive backups, scheduling unattended backups, and a "smart restore" process are just three of the many features of Central Point Backup.

Back up your hard drive copies the main Central Point Backup files and help files.

Floppy support copies the specific files for backing up your hard disk data to floppy disks. If you do not back up to floppy disks, do not select this option.

QIC 40/80 tape support copies the specific files for backing up your hard disk data to a tape drive. If you do not have a tape drive, do not select this option.

Local and network SCSI tape support copies the specific files for backing up your hard disk data to a SCSI device located in your local drive or network. If you do not have such a device, do not select this option.

Central Point Commute

Central Point Commute is a communications program that lets you run another computer by remote control. Connecting two computers using modems, a Novell or NetBIOS-type LAN (local area network), or a null-modem cable, you can run programs and do many other things—manually or automatically. Commute now runs Windows remotely much faster in Version 8.

Compress

Compress optimizes disk performance by rearranging the files on a hard or floppy disk. Compress can defragment files and put specified files and directories at the front of the disk for faster access.

Task Switcher

Task Switcher lets you run multiple programs simultaneously, and easily switch between them.

Data Monitor

Delete/Write Protection, Disk Light, Directory Lock:

Delete Protection provides protection against deleting files accidentally, which improves your chances of recovering the files.

Write Protection protects against accidentally deleting, writing over, or damaging crucial data, program, and system files.

Directory Lock dynamically encrypts and decrypts a directory so that it can be accessed only with a password.

Disk Light provides an onscreen indicator when a floppy, hard, or network drive is being accessed.

Screen Blankers: Prevent screen burn-in and unauthorized access to confidential onscreen data. You can choose from 11 unique patterns, including an onscreen message that you customize.

Directory Maintenance

Directory Maintenance makes it easy to search for, change to, add, rename, delete, and move directories on local and network drives.

NOTE *All directory maintenance functions are included in PC Tools Desktop, but Directory Maintenance provides an alternative program to perform these tasks.*

DiskEdit

DiskEdit lets you view and edit data on disks, including all system and data areas. This program is designed for experienced users.

DiskFix

DiskFix detects and corrects problems with hard and floppy disks.

Build Emergency Disk

Build Emergency Disk lets you create, update, and configure a floppy disk with critical data recovery utilities so that you can "boot clean" and repair or troubleshoot your hard disk drive.

FileFind

FileFind locates files on any drive by name, size, or contents.

FileFix

FileFix repairs damaged spreadsheet, database, and word-processing files using the following formats: Lotus 1-2-3 (all versions), Lotus Symphony, Quattro, Excel, dBASE, Paradox, and WordPerfect.

File Viewer

View lets you display files generated by many popular programs in their native format without starting the program.

Installation

Batch Install copies the Batch Install program, which lets a system administrator configure a network copy of PC Tools so that users can install a pre-configured copy of PC Tools from a network server to their local disks automatically.

Custom Install copies the Customize Install program, which lets a system administrator create a set of customized floppy installation disks to give to users to install on their local disks.

Mirror

Mirror protects against accidental formatting of or damage to hard disks by saving information that can be used for recovery.

Net Message

Net Message lets you send broadcast messages to people on Novell NetWare networks.

Park

Park lets you park your hard disk heads. You should park a hard disk head before moving a computer. It positions the head over an unused portion of the disk to prevent data loss caused by the head bouncing on the disk surface.

PC-Cache

PC-Cache speeds up hard disk access by storing the most frequently used disk information in your computer's memory.

PC Config

PC Config lets you configure colors, display, mouse, keyboard, program password-protection, and startup program options.

PC Format

PC Format formats hard or floppy disks without erasing data, so that Unformat and Undelete can recover the data.

DriveMap

DriveMap lets users share their disk drives and printers with other DriveMap users, using a network, or serial or parallel cables.

PC Secure

PC Secure keeps your proprietary data and programs safe by encrypting (scrambling), compressing, and hiding sensitive files on your disk.

Program Scheduler

Scheduler lets you schedule programs to run at preset times in either DOS or Windows.

RAMBoost

RAMBoost automatically loads programs in upper memory blocks to optimize memory usage in your computer. It requires one of the following memory managers: QEMM, 386MAX, or DOS 5's EMM386.EXE.

System Information

System Information provides information about your computer, such as system configuration, disk and memory use, and relative performance.

Undelete

Undelete recovers files that have been accidentally deleted on DOS, DR DOS, or Novell NetWare systems. For Undelete to function optimally, you should use the Delete Sentry method of delete protection.

Unformat

Unformat lets you unformat hard disks that have been formatted accidentally. Unformat can also recover floppy disks if they were accidentally formatted with PC Format.

Wipe

Protects the confidentiality of deleted files by completely clearing the data from the disk.

Removing PC Tools Programs

If you need to remove some or all PC Tools programs, use the Uninstall command. If you select Everything, all PC Tools programs are removed, in addition to the following:

- Removes modifications (if any) made to the AUTOEXEC.BAT, CONFIG.SYS, and SYSTEM.INI files during installation.
- Deletes all files in the \PCTOOLS directory (or the specified directory if not \PCTOOLS) and then removes the directory and subdirectories.
- Removes the PC Tools group in the Program Manager.
- Removes Format and Undelete name changes.
- Removes modifications made to WIN.INI.
- Checklist files created during Central Point Anti-Virus scans, however, are not deleted.

1. Choose **Uninstall PC Tools**.

   or

   From DOS, type

   ```
   UNINSTALL
   ```

2. Specify the directory where you installed PC Tools utilities.

   Install asks if you were accessing PC Tools programs from Windows.

3. Specify the directory where you have Windows installed and choose **OK**.

   or

   Choose **Skip** if you were not accessing PC Tools from Windows.

4. Select **Everything** if you want to remove all PC Tools programs and choose **OK**.

   or

   Select those applications you no longer want installed and choose **OK**.

5. Press Ctrl Alt Del to restart your computer.

After Installation

For information on last-minute changes to the program that are not included in the manual, read the README.TXT file. You can open it with any text editor or word processor.

Also, test your emergency disk to be sure that you can use it to boot your system.

Viewing the README File

1. Make sure you are in your PC Tools directory (most likely C:\PCTOOLS).
2. From DOS, type:

   README Enter

   You can view the contents of the README.TXT file and print it.

Testing the Emergency Disk

1. Make sure the emergency disk is in drive A and the drive door is closed.
2. Press Ctrl Alt Del to restart your computer.

   You will know that the emergency disk passes the test if your computer displays the A:\> prompt and identifies itself as the emergency disk with information similar to the following:

   ```
   Central Point Emergency Disk V8.0

   This disk was created 09/29/1992 at 07:14p
   ```

3. Remove the emergency disk, stick on the label provided, and store it in a safe, accessible place.
4. Open the drive door, and press Ctrl Alt Del to restart your computer again.

NOTE *If the emergency disk doesn't work, see the* Build Emergency Disk *chapter in* Part 3 Data Recovery and System Utilities *for more information.*

Whenever Your Computer Won't Start

Whenever you can't start your computer, follow these steps:

1. Write down everything that just happened.
2. Turn off the computer.
3. Put the emergency disk in drive A.
4. Turn on the computer.
5. Run DiskFix to determine and correct disk errors.

Configuring PC Tools Startup Programs

Configuring PC Tools programs lets you set up programs so they'll run or be loaded automatically when you start your computer, and specify how you want certain programs to work.

Also, if you're configuring a local computer, the configuration program makes certain changes automatically to your AUTOEXEC.BAT and CONFIG.SYS files so that PC Tools will work properly.

NOTE *For help using windows and dialog boxes, see the* Working in the PC Tools Environment *chapter for details.*

Here's what you'll find in this chapter:

- **Configuring Startup Programs** describes each PC Tools program option you can select and configure.
- **Editing Your Changes** describes how to save or discard proposed changes to your AUTOEXEC.BAT and CONFIG.SYS files.
- **Editing AUTOEXEC.BAT and CONFIG.SYS Manually** explains how to make the necessary changes to these startup files yourself.
- **Data Protection Guidelines** explains the steps you should take to ensure your data is protected.

The program shows you how much memory each program you've chosen needs.

When you're done making selections and choose to save them, the configuration program modifies your AUTOEXEC.BAT so that these programs load each time you start your computer. If necessary, changes are also made to the CONFIG.SYS file. You always have a chance to view changes and to save them under a different name. If you choose to replace the original file, the program automatically makes a copy of the original file with the extension .CP8, in case you want to retrieve it.

You can configure some PC Tools programs within the program or with command-line options. See each program's chapter for details.

Configuring Startup Programs

You can configure PC Tools programs during or after installation. The opportunity to configure programs during installation occurs automatically; the Configure Startup Programs window appears.

You can also modify an existing PC Tools configuration at any time after installation from PC Tools Desktop or by running PC Config.

1. Choose **Startup Programs** from the Configure menu in PC Tools Desktop.

   or

   From DOS, type

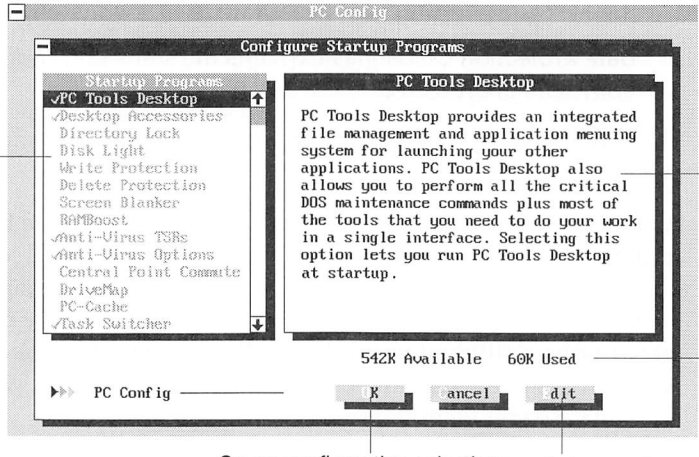
   `PCCONFIG` Enter

2. Choose **Startup Programs**.

   The Configure Startup Programs window appears.

See the *PC Config* chapter in this part of the manual for information about the other options you can modify with PC Config.

The Configure Startup Programs Window


PC Config
Configure Startup Programs
Startup Programs
PC Tools Desktop
√PC Tools Desktop
√Desktop Accessories
Directory Lock
Disk Light
Write Protection
Delete Protection
Screen Blanker
RAMBoost
√Anti-Virus TSRs
√Anti-Virus Options
Central Point Commute
DriveMap
PC-Cache
√Task Switcher
PC Tools Desktop provides an integrated file management and application menuing system for launching your other applications. PC Tools Desktop also allows you to perform all the critical DOS maintenance commands plus most of the tools that you need to do your work in a single interface. Selecting this option lets you run PC Tools Desktop at startup.
542K Available 60K Used
PC Config
ancel
dit

Select programs to configure from the list.

View a description of each option here.

Shows how much memory selected programs require.

Saves configuration selections in AUTOEXEC.BAT and CONFIG.SYS file.

Lets you view proposed changes to AUTOEXEC.BAT and CONFIG.SYS file.

The Configure Startup Programs window contains a list with each program that can be configured. Scroll through the list to see a description of the program on the right side of the panel.

If you did a Custom, Laptop, or Minimal Installation and installed selected PC Tools programs, only those programs you installed appear in the Configuring PC Tools Startup Programs window.

NOTE *If an item is missing that you want to configure, start Install from your hard disk to copy the program's files onto your hard disk. See the* Installing PC Tools *chapter for details.*

Checking Memory Requirements

Before Install makes any changes to your AUTOEXEC.BAT file, you can see how much memory the startup programs you've selected require.

As you select items in the list, the memory requirement information changes to show you how much memory the selected items require.

NOTE *This estimate does not take into account the use of RAMBoost or a memory manager such as QEMM, 386MAX, or the MS-DOS Version 5 EMM386, to load programs into upper memory (memory between 640K and 1MB). If you are using a memory manager, you may, in fact, have enough memory to use PC Tools. If you are using the MS-DOS Version 5 memory manager, PC Tools TSRs are loaded into upper memory automatically, without the necessity of using the LOADHIGH command.*

PC Tools Desktop

PC Tools Desktop is an easy-to-use environment that makes handling files, directories, and documents efficient and easy. PC Tools Desktop provides access to *all* PC Tools programs and their functions along with all the critical DOS maintenance commands.

PC Tools Desktop pulls together almost everything you need to perform your everyday computing tasks: You can set up programs to run at scheduled times; perform backups to disk, tape or network drives; check your meeting schedules and set alarms to remind you; send and receive Email; perform calculations on four types of calculators; quickly switch between programs, such as your database, spreadsheet, or word processor; scan for viruses; perform remote file transfers with Commute; and perform all the critical data recovery procedures such as disk optimization, file recovery, disk analysis and repair.

PC Tools Desktop also includes a configurable menuing system that allows quick access to programs, data files, and complete menus of PC Tools programs. You can customize PC Tools Desktop for your individual needs, such as changing menus and function keys.

Selecting this option runs PC Tools Desktop every time you start your computer.

If you select PC Tools Desktop during the installation process and have never performed an application search, an additional dialog box asks if you want the program to search your disk for applications to be installed in the PC Tools Desktop Menu Window.

Search network drives: Tells the program to search any network drives you are currently logged on to.

Create a separate network group: Tells the program to create a separate submenu in PC Tools Desktop for applications found on network drives.

If you don't choose to perform an application search now, you have another opportunity to do so before running PC Tools Desktop the first time.

NOTE to UPGRADERS *PC Shell is now PC Tools Desktop. You can access the program and use it the same way you did in Version 7. There is also a menu configuration that displays the same menu structure you used in Version 7.*

Desktop Accessories

Desktop Accessories is a complete desktop organizer that includes a simple text editor, an outliner, an appointment scheduler, a database program, a macro editor, and electronic mail and telecommunications capability.

Selecting this option loads Desktop Accessories as a memory-resident program every time you start your computer. (If you don't select this, you can still start Desktop Accessories as a standard application. See *Part 4 Desktop Accessories* in Volume 2 for details.)

Directory Lock

Turns on the Directory Lock option of Data Monitor each time you start your computer.

Directory Lock encrypts the files in a specified subdirectory so that they cannot be changed or read by anyone who does not know the password you assign.

Before Directory Lock can take effect, you must specify the directories to be protected. If you don't configure Directory Lock, it does not protect any directories. You can configure Directory Lock further from PC Tools Desktop. For additional information on *using* Directory Lock, see the *Data Monitor* chapter in *Part 3 Data Recovery and System Utilities.*

NOTE *If you need full DES (Data Encryption Standard) security, you should use PC Secure instead. See the* PC Secure *chapter in* Part 3 Data Recovery and System Utilities *for details.*

Disk Light

Turns on the Disk Light option of Data Monitor each time you start your computer.

Disk Light saves you from having to peer under your desk to see if your computer is accessing one of its drives. It also lets you know when you are accessing network drives and which ones they are.

Whenever the computer is reading from or writing to a drive, the letter of that drive appears in the upper, right-hand corner of your screen. You can see Disk Light from within any text-based program; it is not visible from within graphics-based applications, such as Microsoft Windows.

Write Protection

Turns on the Write Protection option of Data Monitor each time you start your computer.

Write Protection prevents crucial data, program, and system files from being deleted, overwritten, or damaged. Once you turn on Write Protect, a dialog box requires confirmation before you can make changes to a write-protected file.

Before Write Protection can take effect, you must specify the areas to be protected. If you don't configure Write Protection, nothing is protected. You can configure Write Protection further from PC Tools Desktop. For additional information on *using* Write Protection, see the *Data Monitor* chapter in *Part 3 Data Recovery and System Utilities.*

Delete Protection

Delete protection provides two different methods of security against accidentally deleting an important file: Delete Sentry and Delete Tracker. By selecting either method, you greatly improve your chances of recovering a file with Undelete.

Enable maximum protection by hiding files: Turns on the Delete Sentry method of delete protection each time you start your computer.

Delete Sentry saves deleted files in a hidden directory named \SENTRY, thus providing complete protection against accidental deletion. You can use this method on network and local drives.

For information about using Delete Sentry on a network volume, see the *Using PC Tools Programs in a Network Environment* chapter.

Enable lesser protection by recording deleted file's location: Turns on the Delete Tracker method of delete protection each time you start your computer.

Delete Tracker saves information that will help Undelete find deleted files. This provides a somewhat lesser degree of protection than Delete Sentry. However, if you use Undelete soon after the a file was deleted, you'll still have a good chance of recovering it. This method is not available on network drives.

No protection: Disables delete protection. Undelete can still recover unprotected deleted files, but the chances of complete recovery are lessened.

Screen Blanker

Turns on the Screen Blanker option of Data Monitor each time you start your computer.

If the same image is displayed on your monitor for long enough, it will be "burned into" the display permanently. Screen Blanker protects against this by clearing the screen whenever your computer is idle for a specified period of time.

To configure Screen Blanker further, use PC Tools Desktop. For additional information on Screen Blanker, see the *Data Monitor* chapter in *Part 3 Data Recovery and System Utilities*. Screen Blanker's password option can provide security for your data. If you walk away from your computer, you can require that a password be entered before using the computer again. You can choose from 11 unique patterns, including an onscreen message that you customize.

RAMBoost

RAMBoost runs invisibly on your PC, optimizing available memory automatically each time your PC's system configuration changes. RAMBoost requires one of the following memory managers: QEMM, 386MAX, or DOS 5's (or Windows 3.x) HIMEM.SYS and EMM386.EXE.

Because the free space in upper memory is usually in several pieces of different sizes, programs may fit in some areas but not in others. RAMBoost analyzes multiple combinations to find the most efficient ordering of programs in upper memory.

You configure RAMBoost once. Then, each time you start your PC, RAMBoost analyzes your PC's resident programs and device drivers, selects the optimal loading configuration, and loads them into upper memory blocks. As a result, you will have more free conventional memory.

RAMBoost analyzes your memory usage after you save your configuration change. See "After Saving Your Changes" for a description of the analysis RAMBoost performs.

NOTE *Your system must have a 80386 or 80486 processor to install RAMBoost.*

Anti-Virus TSRs

Start Fully Comprehensive Virus Facility (VSafe): Loads VSafe as a memory-resident program. VSafe checks for all known viruses whenever a program is executed or a disk is accessed. VSafe also checks file integrity, looking for any suspicious activity that may indicate a virus is present. If it finds a virus or suspicious file, VSafe displays a message and the program or disk operation stops, allowing you to run Central Point Anti-Virus to locate and clean the virus.

TIP *To keep VSafe up to date, download the latest virus signature file from the Central Point BBS or the Central Point Forum on CompuServe. Follow the posted instructions for copying the signature file into the directory where PC Tools programs are installed.*

Start Virus Detection Only (VWatch): Loads VWatch as a memory-resident program. VWatch checks for known viruses whenever a program is executed or a disk is accessed. If it finds a virus, VWatch displays a message and the program or disk operation stops, allowing you to run Central Point Anti-Virus to detect and clean the virus.

Do not start Anti-Virus: No virus protection is loaded in memory.

See the *Ongoing Virus Protection* chapter in *Part 1 Central Point Anti-Virus* in Volume 2 for more details about the differences between VSafe and VWatch.

Anti-Virus Options

Check for boot sector viruses on startup: Loads BootSafe so that it runs every time you start your computer. BootSafe checks for viruses that infect your boot sector and partition tables.

Scan for viruses: Starts Central Point Anti-Virus to perform a virus-detection scan every time you start your computer.

Central Point Commute

Central Point Commute is a communications program that lets you run another computer by remote control. Connecting two computers using modems, a Novell LAN or NetBIOS-type (local area network), or a null-modem cable, you can run programs and do many other things—manually or automatically. Commute now runs Windows remotely much faster in Version 8.

Start Commute: Loads Commute as a memory-resident program to answer an incoming call each time you start your computer.

Start Commsml: Loads a version of the Commute program that uses less memory while it is waiting for a call. You should select this option if you're not using a memory manager or if you don't have much conventional memory available.

Do not start Commute: Does not load Commute into memory to wait for a call each time you start your computer.

DriveMap

DriveMap allows you to share your disk drives and printers with other DriveMap users, using a network or a serial or parallel cable. You may elect to "protect" some or all of your drives and printers from other-user access, while still retaining access to the drives and printers made available by other users. Global password protection is also available.

PC-Cache

PC-Cache speeds hard disk access by storing the most frequently used disk information in your computer's memory.

Start PC-Cache: Loads PC-Cache into memory each time you start your computer.

When you choose to load PC-Cache resident, the program checks to see if any other disk-caching utility is already being loaded in your AUTOEXEC.BAT or CONFIG.SYS file. If it finds one, exit from the program and remove this line from your AUTOEXEC.BAT file. (See "Editing AUTOEXEC.BAT and CONFIG.SYS Manually" later in this chapter.) Then use PC Config again.

Don't automatically load PC-Cache into high memory: Prevents PC-Cache from loading into DOS 5's upper memory blocks (UMBs), even if available, and forces PC-Cache to load itself into conventional (low) memory. Normally, PC-Cache uses upper memory if available.

Ensure PC-Cache occupies minimal Conventional Memory: Reduces the amount of conventional memory PC-Cache uses to load into by 2K to 4K, depending upon the size of the cache. This option does not change the size of the data cache, however.

Memory Usage: Lets you specify one of the following types of memory to use for the cache.

Default: When it's loaded, PC-Cache checks your computer for installed memory and automatically configures its size, according to the following guidelines:

If There is	Then PC-Cache Uses
At least 64K of extended memory available	All of it (up to 256K)
At least 64K of expanded memory available	All of it (up to 256K)
Less than 64K of both expanded and extended memory available	64K of conventional memory. If there is not 64K of conventional memory available, PC-Cache is not loaded.

Conventional: Sets up a cache in conventional memory. Minimum size: 16K. Maximum size 99K.

Expanded: Sets up a cache in expanded memory. Minimum size: 32K. Maximum size: 31MB.

Extended: Sets up a cache in extended memory. Only available on 286-class and higher computers. Minimum size: 32K. Maximum size: 31MB.

Extended with BIOS access: Uses BIOS to access the cache in extended memory.

Cache size: Lets you specify the size of the cache. The previous table shows cache limitations.

Cache size when running Windows: Tells PC-Cache to resize the cache to this size when you start Windows. Windows uses this memory for its use. When you quit Windows, PC-Cache restores the cache to its normal size. This option does not work if you have a cache in conventional memory.

Delay writes to disk for added performance: Tells PC-Cache to speed disk writing by combining consecutive disk-writing operations, then writing them all at once when DOS is idle.

Restrict data transfers to one sector at a time: For extended-memory caches only, ensures that only one sector of data is transferred at a time, even if the cache is greater than 100K (which would normally transfer eight sectors of data at a time). This option is sometimes necessary for use with communication software.

Disable status startup information: Disables the status display that appears when the cache loads and when the cache options are changed.

Task Switcher

Task Switcher is a memory-resident utility that allows you to run more than one program at a time and easily switch between them.

Start Central Point Task Switcher: Loads Task Switcher into memory.

Don't automatically load Task Switcher into high memory: Forces Task Switcher to load into conventional memory.

Use CTRL-ESC for the hotkey instead of ALT-ESC: Lets you use Ctrl instead of Alt for the hotkey that pops up Task Switcher.

- Choose where to store inactive task information (swap files):

  Hard Disk

  Expanded Memory

  Extended Memory

Amount of EMS/XMS memory to reserve: Specify the amount of memory to use for swap files. You cannot use less than 800K for swap files.

See the *Task Switcher* chapter in *Part 3 Data Recovery and System Utilities* for more information.

Program Scheduler

Program Scheduler lets you schedule any program to run automatically at the time and day you schedule. For example, you can back up your hard drive with Central Point Backup or transfer files with Commute even when you're not there.

Earlier in the installation process, you specified the times you wanted Compress, Central Point Backup, DiskFix, or CP Anti-Virus to run automatically. This option loads Central Point Scheduler (CPSCHED.EXE) into memory each time you start your computer so that those scheduled programs are launched. If CPSCHED.EXE is not loaded in memory, scheduled programs will not run.

See the *Central Point Scheduler for DOS* chapter in *Part 3 Data Recovery and System Utilities* for details.

Mirror

This option runs Mirror for all specified hard drives each time you start your computer.

Mirror protects your hard disk by saving a copy of the information in its system area. This improves your chances of using Unformat or DiskFix to recover data from an accidentally formatted or damaged disk.

Fax Driver

Selecting this option indicates that there is a supported fax board installed in this computer or in a computer to which this one is networked.

NOTE *Before selecting this option, you or your network supervisor should first have installed the fax board and its software according to the instructions in the fax board manual. The network supervisor should read "Fax Telecommunications" in the* Using PC Tools Programs in a Network Environment *chapter later in this manual.*

If you selected Fax, a dialog box advises you that you must have already installed the fax board and fax board software. If you choose OK, you see these options:

Fax Directory: Lets you specify the directory where fax files is stored before they are sent.

Fax Board is in Local computer/Fax Board is in Remote Network Workstation: Indicates whether the fax board is located in this computer or in a computer to which this one is networked. Then you specify the directory where the fax software is installed.

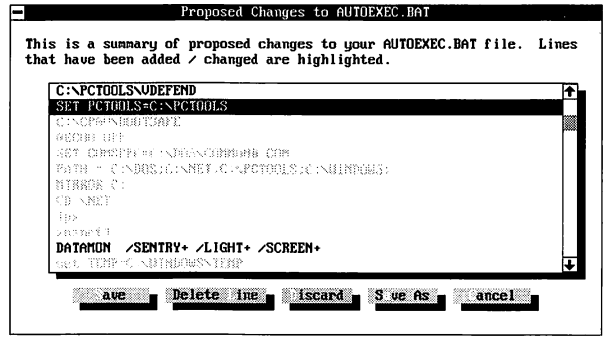
For more information, see the *Fax Telecommunications* chapter in *Part 4 Desktop Accessories* in Volume 2.

Editing Your Changes

After selecting configuration options, you can choose to see the proposed changes to your AUTOEXEC.BAT file. You can delete lines or save the file under another name.

If a change to CONFIG.SYS is necessary, you'll see it after you save or discard changes to your AUTOEXEC.BAT file. The same editing commands are available for CONFIG.SYS.

- Choose **Edit** to see the proposed changes.



Deleting a Line

1. Move the highlight to the line using ↑ and ↓ or the mouse.
2. Choose **Delete Line**.
3. Choose **OK** to confirm the deletion.

Saving the Changed File

1. Choose **Save** to save this file as the new AUTOEXEC.BAT file.

   If an AUTOEXEC.CP8 file already exists, the existing AUTOEXEC.BAT file is not saved. If there is not an AUTOEXEC.CP8, the current AUTOEXEC.BAT is renamed to AUTOEXEC.CP8.

   or

   Choose **Save As** to save this file under a name of your choice.

   You can then use a text editor to make more changes to the file before replacing the current AUTOEXEC.BAT with it.
2. Choose **OK** to return to the Configuration window.

Abandoning Changes to the File

- Choose **Discard** to eliminate the proposed changes to the CONFIG.SYS file, and then to return to the startup program configuration window.

  or

  Choose **Cancel** to return to the startup program configuration window.

After Saving Your Changes

If you elected to install RAMBoost, after you save changes to AUTOEXEC.BAT and CONFIG.SYS, a dialog box gives you the chance to configure RAMBoost.

1. Choose **OK**.
2. Choose **Reboot** so that the changes you've made will take effect.

   After rebooting, RAMBoost configures itself to optimize your use of memory.

Configuring RAMBoost

Setting up RAMBoost is mostly automatic, after it checks to see whether your computer is using a memory manager.

If you have the DOS 5.0 or Windows 3.x memory manager installed, RAMBoost is installed in your CONFIG.SYS file and provides you with the option of modifying your PC's upper memory blocks. Ignore this option for now. If you are technically advanced and know the details of your system's upper memory, you can use this option later to modify your configuration. For more information, see the *RAMBoost* chapter in *Part 3 Data Recovery and System Utilities*.

If RAMBoost detects that you have a memory manager other than the DOS 5.0 or Windows 3.x, it installs RAMBoost in your CONFIG.SYS file and possibly modifies your AUTOEXEC.BAT file.

If RAMBoost detects that you have no memory manager installed, but finds the DOS 5.0 or Windows 3.x memory manager on your PC, it installs RAMBoost and the memory manager in your CONFIG.SYS file.

If RAMBoost cannot find a memory manager on your PC, it informs you that you must install one.

After RAMBoost is installed in your CONFIG.SYS file, a dialog box appears allowing you to reboot your PC or exit. Choose **Reboot** to activate RAMBoost. If you choose **Exit**, RAMBoost is activated the next time you reboot your PC.

RAMBoost restarts your computer twice. The first time, it loads all of your memory-resident programs as usual and keeps a record of how much memory they use and how they are loaded.

The second time, RAMBoost actually rearranges the programs to fill your upper memory as much as possible. You should then find a noticeable increase in conventional memory available for running applications.

From now on, each time you boot your PC, RAMBoost is loaded and optimizes memory usage. Whenever you reboot your PC, if RAMBoost determines that one of the system files it tracks has been altered (such as your AUTOEXEC.BAT or CONFIG.SYS files), or some other special condition has changed, RAMBoost automatically enters LEARN mode to optimize your PC's new configuration.

Editing AUTOEXEC.BAT and CONFIG.SYS Manually

In most cases, the configuration portion of Install can make all necessary changes to your AUTOEXEC.BAT and CONFIG.SYS files. However, you may sometimes need (or prefer) to edit these files manually. Here are some reasons you might do this:

- **To use additional command-line options.** Some PC Tools programs offer configuration options that you can use *only* by including additional command-line options in AUTOEXEC.BAT. See the individual program's command-line options chapter for information about its command-line options.
- **To resolve TSR conflicts.** A conflict between one of the PC Tools programs and another TSR can sometimes be resolved by changing the order in which TSRs are loaded in AUTOEXEC.BAT. See the *Memory-Resident Programs* chapter in *Part 4 General Reference* in this volume for some tips on resolving conflicts between TSRs.

It's a good idea to make a copy of your original file before you change it, so you can go back to the copy if your changes don't work out. For example, before editing AUTOEXEC.BAT, you could type

```
COPY AUTOEXEC.BAT AUTOEXEC.SAV Enter
```

To edit AUTOEXEC.BAT or CONFIG.SYS, use any text editor or word processor that can save files in ASCII or plain text format, such as the Notepads editor in Desktop Accessories. Once you've made and saved your changes, restart your computer by pressing Ctrl Alt Del so that they will take effect.

Configuring PC Tools Yourself

If you want to configure PC Tools yourself, at least make the following changes to your AUTOEXEC.BAT and CONFIG.SYS files:

1. Add the directory where you installed PC Tools to your PATH command, which enables you to start PC Tools programs from any drive or directory.

2. Set the PCTOOLS environment variable to point to the directory where you installed PC Tools, which tells PC Tools where to store the user-specific files it creates.
3. If CONFIG.SYS does not already contain the line FILES=30 (or greater), add that line to it.

Data Protection Guidelines

If you consistently use the PC Tools utilities as outlined below, your disks will perform optimally, and your data is recoverable in the event of a mistake or mishap.

NOTE *The most effective way to ensure against losing data is to back up your hard disk regularly. A recent backup of your data guarantees recovery of any data lost.*

- Create an emergency disk, which can be used to repair just about any disk problem: use it to restart your computer, recover deleted files, repair the hard disk, unformat the hard disk, scan for viruses and clean any that are found. You can also restore partition table, CMOS, and boot sector information.
- Run Mirror from your AUTOEXEC.BAT file to improve Unformat and DiskFix in data recovery.
- Run BootSafe and VSafe or VWatch from your AUTOEXEC.BAT file to guard against virus infection.
- Run Central Point Anti-Virus regularly to scan
  - the hard disks in your computer for viruses
  - each floppy disk you use in your computer
  - files you download from a bulletin board service or copy from someone's floppy disk.
- Load the Delete Sentry or Delete Tracker method of delete protection to improve chances of recovering accidentally deleted files.
- Make regular backups of your hard disk with Central Point Backup.
- Run DiskFix on a regular basis to detect and correct problems with your hard disk.
- Use Compress on a regular basis to avoid file fragmentation and make it easier to recover deleted files.
- Use SI (System Information) to print a report of all your system information whenever you modify your computer system.
- Always use PC Format to format disks.

Starting PC Tools

To function properly, all PC Tools programs must be installed in the PCTOOLS directory (or the directory you specified during Install), and this directory must be included in the PATH statement of your AUTOEXEC.BAT file. If you configured PC Tools during installation, this has already been done.

Starting Programs from PC Tools Desktop

PC Tools Desktop provides an easy way to see and launch all your programs from one place.

- From DOS, type

  PCTOOLS Enter

  PC Tools Desktop appears.

NOTE *If you load the Task Switcher, PC Tools Desktop uses it when it launches programs from the Menu Window. This allows you to switch between programs quickly. See the* Task Switcher *chapter in* Part 3 Data Recovery and System Utilities *in this volume for more information.*

The following screens show possible ways to configure and use PC Tools Desktop.

NOTE *What you see when first starting the program depends on whether you have PC Tools Version 7 installed or how you last configured the program.*

For information on adding your own programs to the Menu Window of PC Tools Desktop, customizing these programs, and using the Menu Window and the DOS command line, see *Part 2 PC Tools Desktop* in this volume.

For more information about window features see the next chapter, *Working in the PC Tools Environment.*

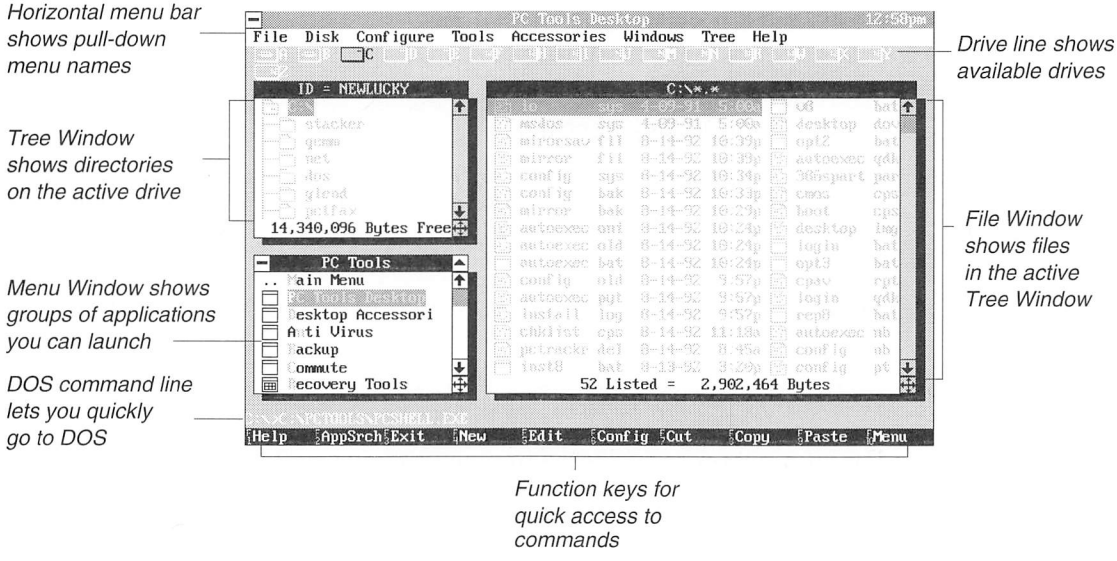
PC Tools Desktop is an easy-to-use window environment that makes handling files, directories, and documents efficient and easy. PC Tools Desktop provides access to *all* PC Tools programs along with all the critical DOS maintenance commands, such as copy, move, and delete.

PC Tools also provides drag-and-drop capabilities, which enable you to manage files and directories, and run programs from within PC Tools Desktop. You can use the point-and-click environment to perform tasks more efficiently than you can from the DOS command line.

PC Tools Desktop also includes a configurable menuing system that allows quick access to programs, data files, and complete menus of PC Tools programs. You can customize PC Tools Desktop for your individual needs, such as changing menus and function keys.

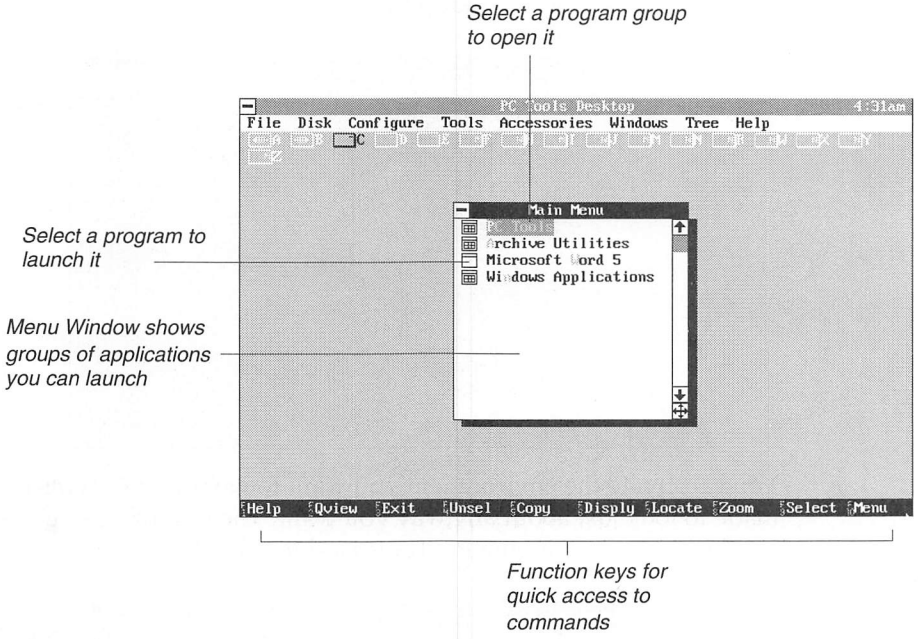
The first illustration shows PC Tools Desktop with the Tree Window, File Window, and Menu Window open.

NOTE *The Menu Window that appears here contains only PC Tools programs. You can also display other programs that you added to the list or were added automatically when you performed the application search.*

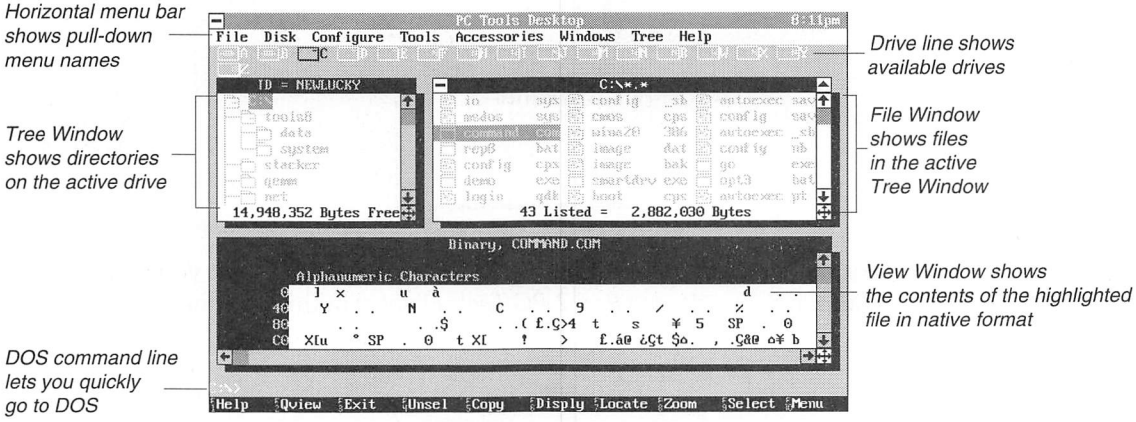

Horizontal menu bar shows pull-down menu names
Tree Window shows directories on the active drive
Menu Window shows groups of applications you can launch
DOS command line lets you quickly go to DOS
Drive line shows available drives
File Window shows files in the active Tree Window
Function keys for quick access to commands
PC Tools Desktop
File Disk Configure Tools Accessories Windows Tree Help
ID = NEWLUCKY
14,340,096 Bytes Free
C:*.*
52 Listed = 2,902,464 Bytes
PC Tools
Help AppSrch Exit New Edit Config Cut Copy Paste Menu

PC Tools Desktop provides easy access to all of your PC Tools programs, as well as all the other programs on your computer. For example, you can choose most of the PC Tools applications from the Tools menu, or all Desktop Accessories programs from the Accessories menu.

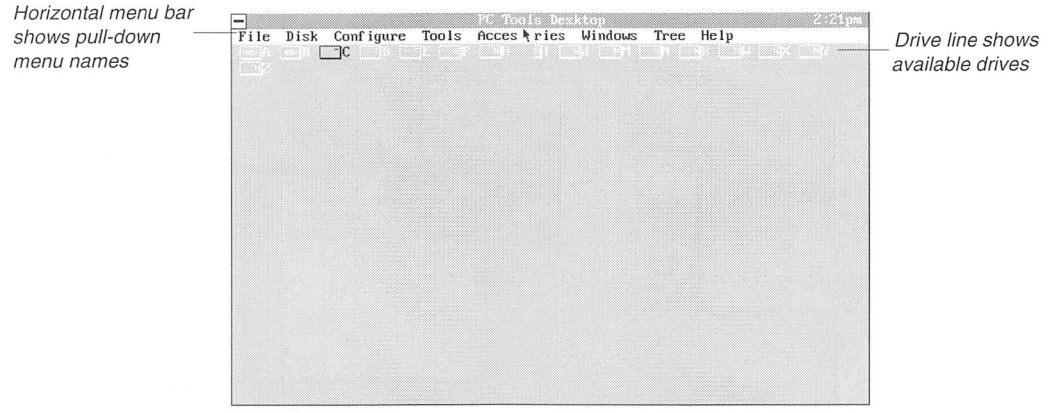
You can launch any application on your hard disk or network server from the Menu Window once you perform an application search to build this list for you:


Select a program group to open it
Select a program to launch it
Menu Window shows groups of applications you can launch
Function keys for quick access to commands
File Disk Configure Tools Accessories Windows Tree Help
Main Menu
Archive Utilities
Microsoft Word 5
Windows Applications
Help Qview Exit Unsel Copy Disply Locate Zoom Select Menu

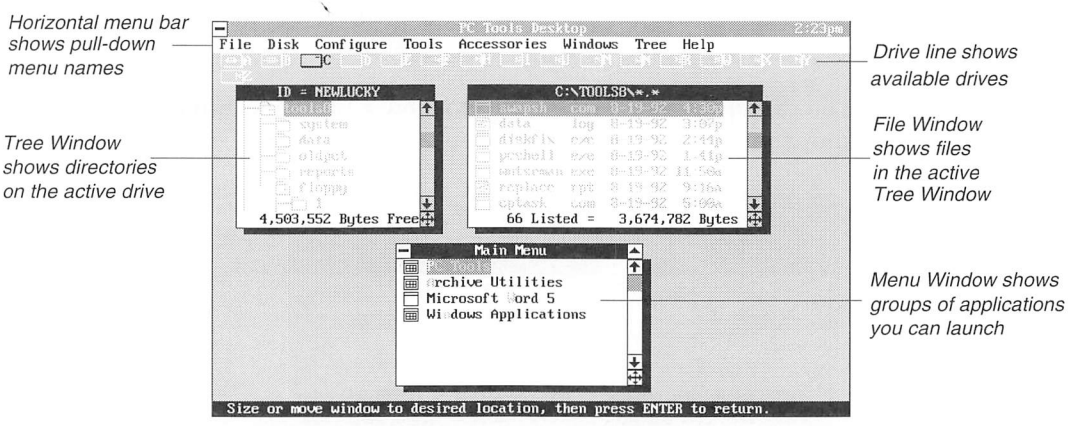
You can open the View window to view a file in its native format, while showing the Tree and File Windows:


Horizontal menu bar shows pull-down menu names
Tree Window shows directories on the active drive
DOS command line lets you quickly go to DOS
Drive line shows available drives
File Window shows files in the active Tree Window
View Window shows the contents of the highlighted file in native format
File Disk Configure Tools Accessories Windows Tree Help
14,948,352 Bytes Free
43 Listed = 2,882,030 Bytes
Binary, COMMAND.COM
Alphanumeric Characters
Help Qview Exit Unsel Copy Disply Locate Zoom Select Menu

You can also turn off all windows. When you close PC Tools Desktop's windows, you can use all of the commands in PC Tools Desktop, have access to all DOS functionality, or the information displayed by an underlying program. This way, you can work in your database or spreadsheet program and have all PC Tools Desktop functions.


Horizontal menu bar shows pull-down menu names
PC Tools Desktop
File Disk Configure Tools Accessories Windows Tree Help
C
Drive line shows available drives

You can create the environment you want to work in. PC Tools Desktop can be made to look just about any way you want. The following screen shows another way of arranging PC Tools Desktop windows:


Horizontal menu bar shows pull-down menu names
PC Tools Desktop
File Disk Configure Tools Accessories Windows Tree Help
C
Drive line shows available drives
Tree Window shows directories on the active drive
ID = NEWLUCKY
4,503,552 Bytes Free
C:\TOOLS8*.*
66 Listed = 3,674,782 Bytes
File Window shows files in the active Tree Window
Main Menu
Archive Utilities
Microsoft Word 5
Windows Applications
Menu Window shows groups of applications you can launch
Size or move window to desired location, then press ENTER to return.

For information on customizing PC Tools Desktop to suit you or your company's needs, see *Part 2 PC Tools Desktop* in this volume.

Working in the PC Tools Environment

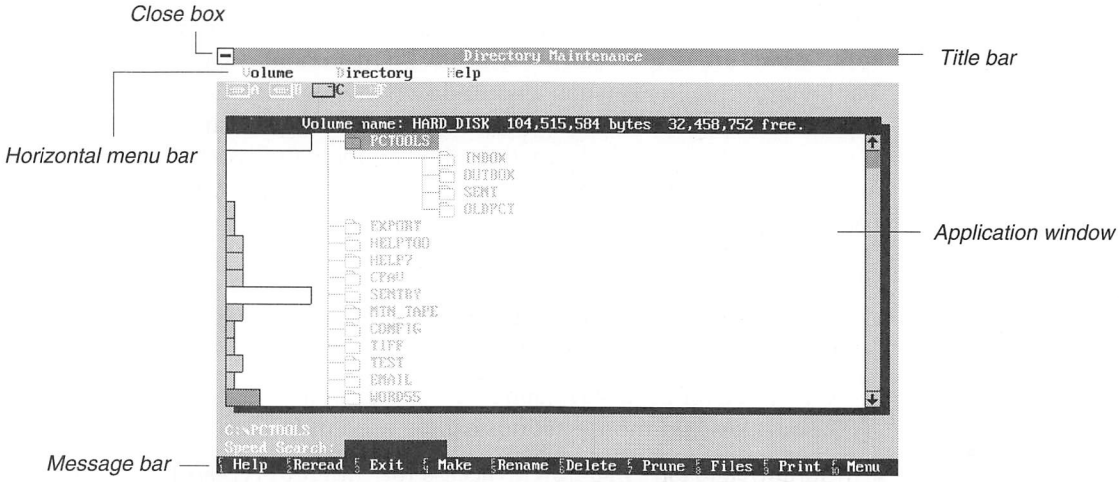
PC Tools uses pull-down menus to simplify choosing commands. Individual applications are displayed in a window environment, which enables them to display multiple items (such as pull-down menus, dialog boxes, and application windows) at the same time. Even though each application in PC Tools performs a different function, they all look and work similarly. Additionally, PC Tools provides online help wherever you are in most PC Tools programs.

Here's what you'll find in this chapter:

- **Parts of the PC Tools Program Window** describes the various features that comprise windows in PC Tools programs.
- **Quick Reference to Navigating PC Tools** provides tables outlining what keystrokes and mouse actions can be used in PC Tools.
- **Getting Help** explains how to access the different types of online help available with PC Tools.
- **Exiting the PC Tools Program Window** explains how you close PC Tools program windows.
- **Window Features** explains how you work with various features in a PC Tools program window when one or more windows are open.
- **Drive Line** explains how you change drives on the drive line.
- **Quick Keys** explains how you pull down menus, choose commands, and select options with quick keys.
- **Tree and File Lists** explains how to select files and directories in the tree and file list windows in PC Tools Desktop.
- **Panels** explains how you activate and select fields in various window panels in PC Tools programs.
- **Menus** describes the pull-down menus in PC Tools programs.
- **Dialog Boxes** explains how you use checkboxes, option buttons, text boxes, command buttons, and list boxes in the dialog boxes in PC Tools programs.
- **File Specifications** describes the various file specifications used by PC Tools program files.

Parts of the PC Tools Program Window

Whenever you run a PC Tools program, a window similar to the following is displayed. Although each program window may vary slightly, the parts described below are usually displayed.



Title Bar: The bar across the top of the screen containing the program's close box and the name of the current program. When clicked once, the close box drops the System Control menu. When clicked twice, it exits from the program. (In Desktop Accessories, an application window must be open to drop the System Control menu.)

Horizontal Menu Bar: The bar under the title bar. It contains the names of pull-down menus available with each application.

Application Window: Contains the information for the application you are working on. The window shown in the illustration above is from Directory Maintenance.

Message Bar: The bar across the bottom of the screen. In some applications the message bar has two functions:

- When a menu or command is highlighted or selected, the message bar shows an explanatory message.
- When no menu or command is highlighted, the message bar usually displays a row of functions that you can perform by using the mouse or pressing a function key.

- Most commands listed on the message bar vary according to the current program and operation, but two remain constant: F1 **Help** and F3 **Exit.** In PC Tools Desktop, you can assign function keys to the commands you use most frequently. See *Part 2 PC Tools Desktop* in this Volume for details.

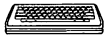
System Control Menu: Displayed when you click the close box or press Alt Spacebar. It contains commands for getting information about and exiting the program (Alt F4).

Quick Reference to Navigating PC Tools

The following tables show what keystrokes and mouse actions are used in PC Tools.

Using the Keyboard

PC Tools offers many ways to move around the screen and manipulate the menus, windows, panels, and dialog boxes with the keyboard.



To	Do This
Activate a window or a distinct area in a window	Press Tab. Press Tab repeatedly to cycle through multiple windows.
Position the cursor	Press Tab to activate the correct area of the screen, then press ↑, ↓, →, and ← to place the cursor where you want it.
Highlight an item	Press Tab to activate the correct area of the screen. Then press ↑, ↓, →, and ← to move the highlight bar to the item you want.
Pull down a menu	Highlight the menu name on the horizontal menu bar and press Enter; or press Alt and the highlighted letter (quick key) of the menu name; or press F10 to activate the menu bar, then press the appropriate quick key; or press F10 to activate the menu bar, then use the arrow keys to highlight the name of the menu you want, and press Enter.
Choose a command	Highlight the command and press Enter, or press the highlighted letter (quick key) of the command name.
Select or deselect an item	Press Enter to toggle the highlight bar. Press Spacebar to toggle a checkbox on and off.

Continued

To	Do This
Select or deselect directories or files	Highlight the first file. Press and hold Enter. The highlight bar moves from top to bottom, and from left to right, selecting or deselecting files.
Scroll through the directory tree list or file list	Activate the correct window with the Tab key and place the highlight bar on the first file or directory. Use Pg Up and Pg Dn to scroll a full screen of the active window up or down. Hold down ↑, ↓, ←, or → to scroll one column or line in that direction. Home takes you to the top of the file or directory tree and End takes you to the bottom.
Close a window, panel, or dialog box	Press F3 or Esc. If you close a program's main window, you exit from the program.

Using Bottom Line Help

Many of the PC Tools programs display helpful, online messages on the bottom line of your screen. These messages change to reflect your place in the program. For example, if you are unsure what a certain pull-down menu command does, highlight that command and read the short description that appears on the message bar.

The Help Menu

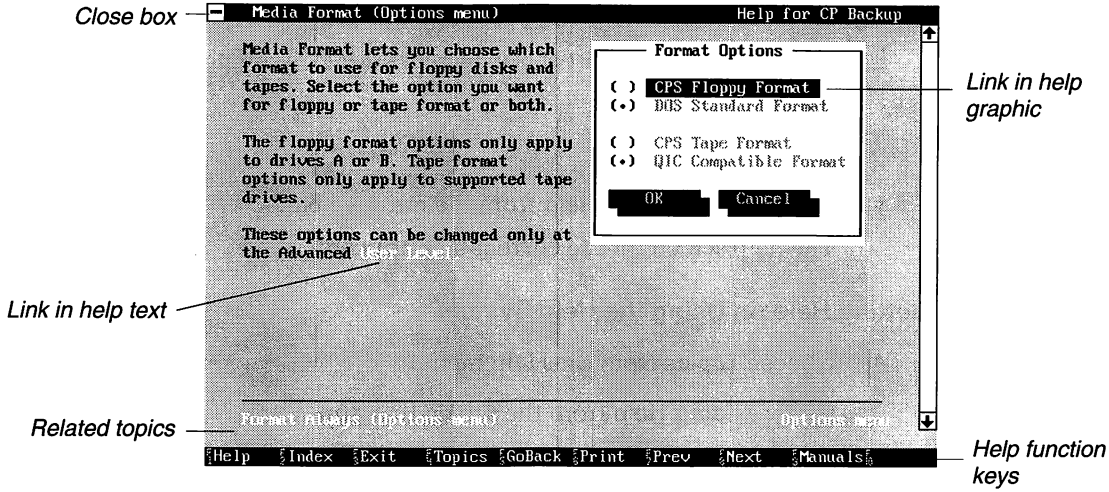
Each PC Tools program has a Help menu that lists commands you can use with the online help system:

NOTE *The Advice menu is found in PC Tools Desktop and DiskFix.*

Topics	Table of Contents or General Topics List for the Program
Index	Index to help in the program
Keyboard	Function-key commands for each program
Commands	Information on choosing commands
About	Overview of the program
Advice	Basic advice about DOS

The Help Screen

The following sample help screen illustrates the features of the online help system.


Close box
Media Format (Options menu)
Help for CP Backup
Media Format lets you choose which format to use for floppy disks and tapes. Select the option you want for floppy or tape format or both.
The floppy format options only apply to drives A or B. Tape format options only apply to supported tape drives.
These options can be changed only at the Advanced User Level.
Format Options
( ) CPS Floppy Format
(•) DOS Standard Format
( ) CPS Tape Format
(•) QIC Compatible Format
OK
Cancel
Link in help graphic
Link in help text
Related topics
Format Always (Options menu)
Options menu
Help
Index
Exit
Topics
GoBack
Print
Prev
Next
Manuals
Help function keys

Links: Call help for other topics. To display help for a linked topic, tab to a link and press Enter or click the link.

Related Topics: Links that appear below the separator bar, allowing you to display help for other topics that are related to the current topic.

Function Keys

These function keys are available when you display a help screen:

Function Key	Description
F1 Help	Explains how to use the help system.
F2 Index	Goes to the help index, an alphabetical list of topics in this help file.
F3 Exit	Closes the help window, returning to the program you called help from.
F4 Topic	Shows a general topics list for the program.
F5 Go Back	Returns to the last help topic you saw. Choose this repeatedly to go back through all the topics you've seen.

Continued

Function Key	Description
F6 Print	Prints the current topic (if a printer is connected to the printer port LPT1).
F7 Prev	Goes to the previous page in the help file. (To go to the last page you looked at, press Backspace or F5.)
F8 Next	Goes to the next page in the help file.
F9 Manuals	Shows a list of help files for other PC Tools programs.

Using Online Help

▶ Press F1 or choose **Help** from the message bar.

The help screen for the current task appears.

Getting Help on Using the Help System

1. Choose **Topics** from the Help menu.
2. Choose **Using Help** from the screen that appears.

   A help screen appears, showing information on how to use the help system.

Exiting from the Help System

▶ Press F3, click the close box, or click **Exit** on the message bar.

The help window goes away and you return to the program.

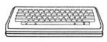
Getting Help for Other Topics

The online help system is particularly useful because it allows you to "jump" to related topics that you want information about. There are several ways to select related topics. You can:

- Choose a link, which is a "hot spot" that lets you jump directly to a related help topic. Any phrase in a help screen that is brightly colored (or bold on monochrome displays) is a link.
- Select a topic from the help index. The index lists all the help topics you can display information about and is accessible from any help screen.
- Select a topic from the Topics screen, which is like a Table of Contents.

Using links and the help index, you can display help for as many topics as you like. When you close the help screen, you return to the place you left off in your program.

Jumping to a Related Topic



- Press Tab, Spacebar, or an arrow key to highlight a link, then press Enter.

or

- Click the hypertext link.

  The help window for that topic appears.

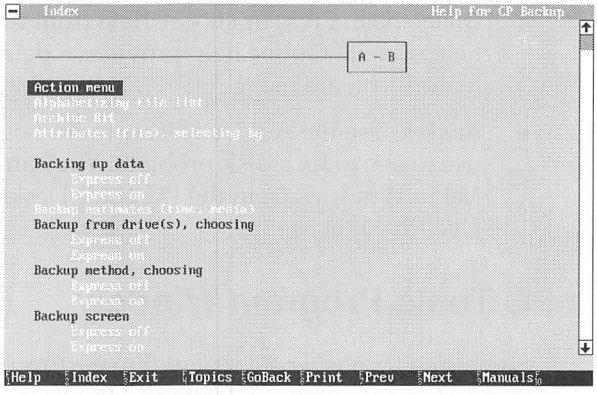
  or

- Press F5 or click **GoBack** on the message bar.

  The most recent help topic appears. By repeating this step, you can redisplay all the topics you've seen since you displayed the help screen.

Using the Help Index

1. Press F2 or choose the Index link in the Related Topics section of the screen to display a list of other topics for this program.



2. Select a topic you want help on, then click it or press Enter.

   The help window for that topic appears.

Getting Advice for Disk Errors

The online DOS Advice feature helps you figure out which PC Tools application to use to fix a disk problem. Whenever you see a disk-related error message from DOS or CHKDSK, Advice gives you a possible solution.

If you allowed Install to add any of the Data Recovery programs to the PC Tools Menu Window, you can call online Advice from PC Tools Desktop's Help menu, or from DiskFix's Main Menu.

1. Open the Data Recovery group in the Menu Window.

   Instructions for displaying the Menu Window are given in the *Starting PC Tools* chapter. To open an entry in the Menu Window, you can double-click it or select it and press Enter.

2. Open DiskFix and choose **Advice** from the Main Menu.

   or

   Choose **DOS Advice** from the PC Tools Desktop Help menu.

Getting Help

PC Tools provides online help wherever you are in most PC Tools programs.

You can get help in several ways while using PC Tools:

- **Bottom line help.** Refer to the help messages that appear on the message bar as you use the programs.
- **Online help.** Press or choose **Help** from the message bar to use the online help system. Online help provides a detailed explanation of the program feature you are using.
- **Advice.** Use the Advice feature to find out which PC Tools utility you can use to use to fix a disk problem. You can get Advice from the PC Tools Menu Window, from the PC Tools Desktop Help menu, or from the DiskFix Main Menu.

Exiting a PC Tools Program Window

Sometimes choosing a command to perform causes an application window to close. However, you can leave any PC Tools program by using the following procedure.

- Choose **Exit** from the message bar.

  or

  Press Esc or F3 or Alt F4.

  or

- Double-click the program window close box in the upper-left corner.

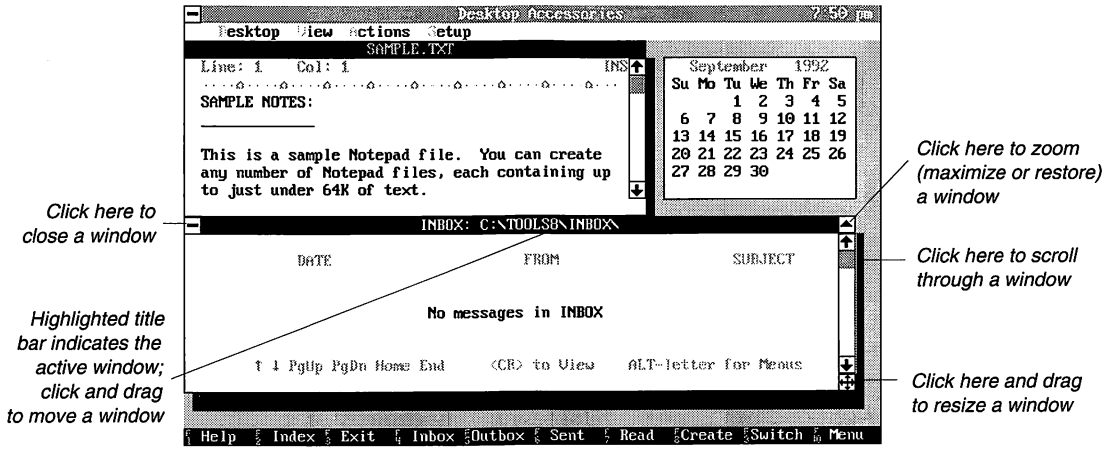
  or

  Click the close box to display the System Control menu, then choose **Close**.

Window Features

A window is an area on the screen in which PC Tools applications display their information. Some of the programs have one window; others let you have multiple windows open at once.

Most windows contain these features:


Click here to close a window
Highlighted title bar indicates the active window; click and drag to move a window
Click here to zoom (maximize or restore) a window
Click here to scroll through a window
Click here and drag to resize a window
Desktop Accessories
Desktop View Actions Setup
SAMPLE.TXT
Line: 1 Col: 1 INS
SAMPLE NOTES:
This is a sample Notepad file. You can create any number of Notepad files, each containing up to just under 64K of text.
September 1992
Su Mo Tu We Th Fr Sa
1 2 3 4 5
6 7 8 9 10 11 12
13 14 15 16 17 18 19
20 21 22 23 24 25 26
27 28 29 30
INBOX: C:\TOOLS8\INBOX\
DATE FROM SUBJECT
No messages in INBOX
↑ ↓ PgUp PgDn Home End <CR> to View ALT-letter for Menus
Help Index Exit Inbox Outbox Sent Read Create Switch Menu

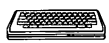
Customizing PC Tools Windows

All PC Tools applications allow you to customize many different window features. They can include the number of lines displayed on the screen, window color, window style, and the use of special graphic-like characters. (See *PC Config* in this part for details.)

Switching the Active Window

Some PC Tools programs allow you to have more than one window open, but you can work in only one window at a time. This is the active window.

The active window is indicated by a highlighted title bar. Inactive windows have a dimmed title bar.



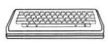
- Press Tab. Press Tab repeatedly to cycle through multiple windows.

or

- Click anywhere in the window you want to activate.

Scrolling in Windows

Sometimes the entire contents of a window cannot be displayed in the available window space. Scrolling allows you to view the entire contents of any window, including the Help windows.



- Use ↑ or ↓ to scroll up or down one line at a time and ← and → to scroll horizontally.

  or

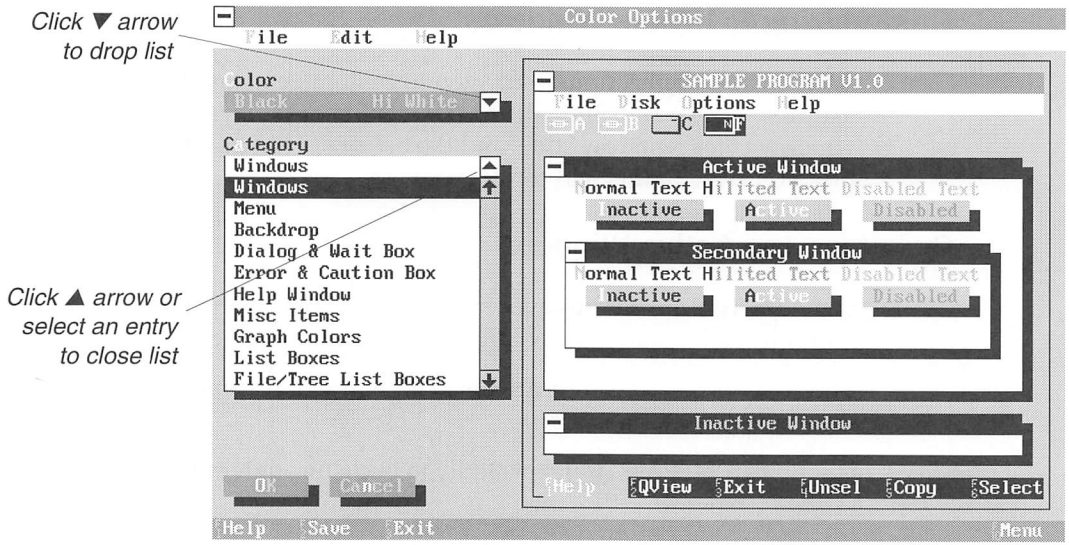
  Use Pg Up or Pg Dn to move up or down one screen at a time and Home or End to go to the beginning or end of the display.

  or

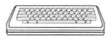
- Press the right mouse button and drag the mouse in the direction you want to scroll, or use the scroll bars.

Drop-Down Lists

Some windows contain drop-down list boxes that you can select an option from. When you type the highlighted letter in the box or click the arrow at the right end of the box, a list of available choices drops down, as shown on the PC Config Color Options window that follows.



Selecting an Item from a Drop-Down List



- Press ↑ and ↓ to position the cursor on the item you want to select, then press Enter.

  The list closes and the item you selected appears in the box.

  or

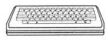
- Click the item you want to select.

  If the list contains more items than will display at once, click the scroll bar or scroll arrows until the item you want to select appears. Then click the item.

Drive Line

The drive line appears just below the horizontal menu bar in some PC Tools programs. Icons or letters on the drive line indicate which drives are available. The drive selected (highlighted) on the drive line is the current drive.

Changing the Current Drive



- Press Ctrl and the drive letter.

  For example, to read drive A, press Ctrl A.

  or

- On the drive line, click the drive you want to select.

Some programs provide additional ways to select a new drive, as described in their chapters.

Resetting the Drive

Some programs allow you to reset the drive. For example, if you accidentally select a large network drive, it might take several minutes to read the entire drive. You can interrupt the read and select a different drive by using this procedure.

- Press the letter of the new drive you want to select.

  For example, press Ctrl C to select drive C.

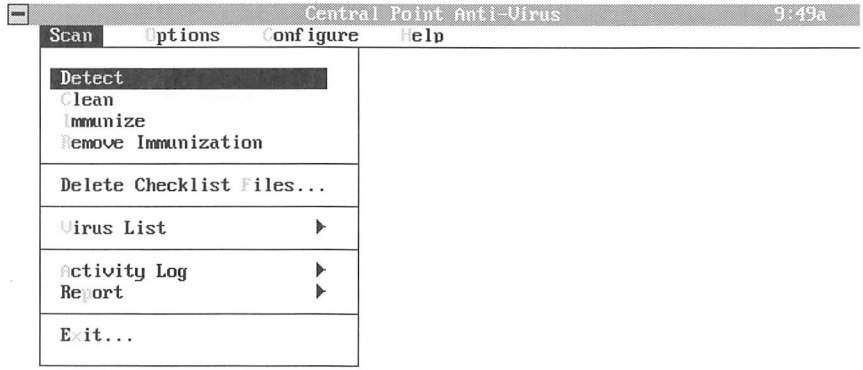
  or

- Click the new drive in the drive line.

Quick Keys

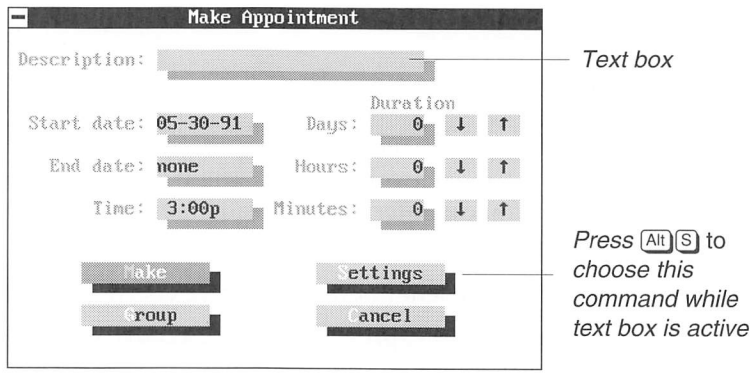
One letter, a quick key, is usually highlighted for each menu title, command, and dialog box option in PC Tools programs. Quick keys make it easy for you to pull down menus, choose commands, and select options with the keyboard.

To select the command or option, press the highlighted letter. For example, press C when the Central Point Anti-Virus Scan menu is displayed to automatically clean any files infected with a virus.



Sometimes you have to press Alt along with the quick key. Pressing Alt signals the program that the next letter you press is a quick key.

For example, because the the Desktop Accessories Appointment Scheduler's Make Appointment dialog box comes up with the first text box active, any characters you type are entered as a description for a new appointment. To choose the Settings command button, you would type Alt S.



Tree and File Lists

Many PC Tools programs have list panels or windows that display lists of directories or files. PC Tools Desktop allows you to resize and move the windows containing the tree and file lists, but other PC Tools programs do not.

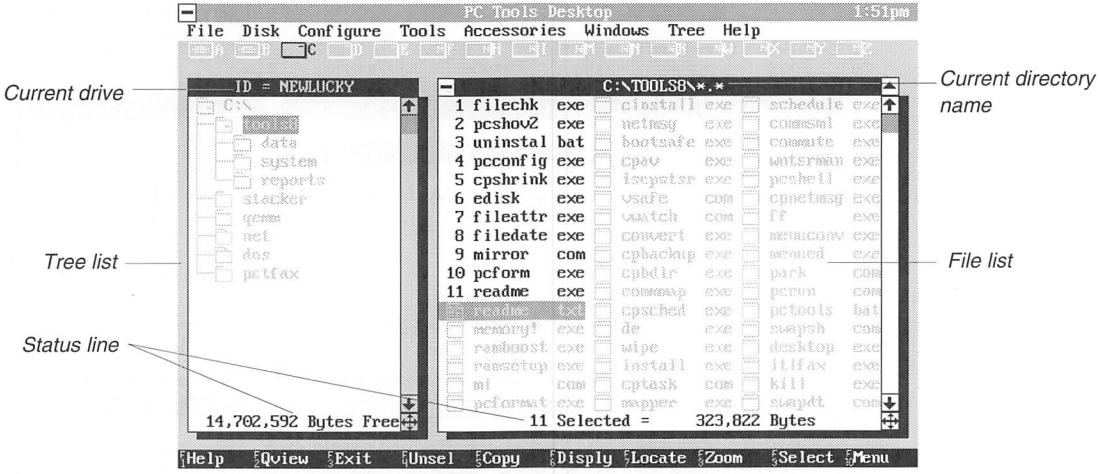
Tree Lists

The tree list displays a graphic tree of the directories and subdirectories on the selected drive.

TIP *In PC Tools Desktop, the status line at the bottom of the tree list shows the number of bytes free on the current drive. If you're using the PC Tools graphics fonts, you'll also notice that some programs use icons to indicate files and folders. The ⊞ and ⊟ buttons in folders depict expanded or collapsed subdirectories.*

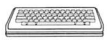
File Lists

A file list displays the files in the active directory, which is the one selected in the tree list.



Selecting Directories and Files

You can use any of the following procedures to select directories and files in the tree and file lists.



- Highlight the entry you want to select and press Enter.

  You can use the arrow keys, Pg Up, Pg Up, Home, or End to position the highlight bar.

or

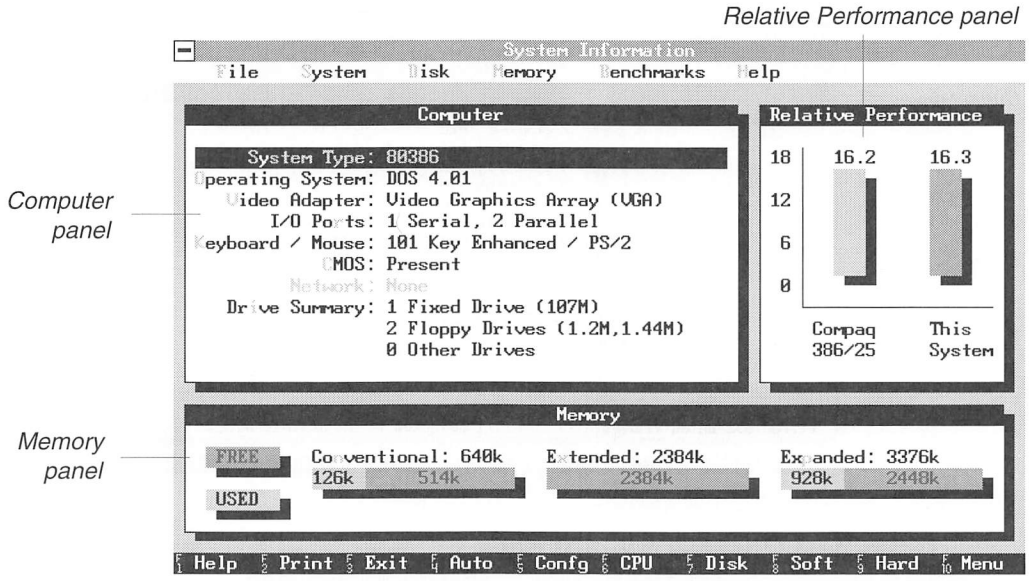
▶ Click the directory or file with the left mouse button.

In addition, you can use this procedure to select multiple files that are listed next to each other.

1. Press the right mouse button and position the highlight bar over the first file you want to select, then press and hold down the left mouse button.
2. Drag the highlight bar over any additional files you want to select.
3. When you have highlighted all the files you want to select, release both mouse buttons.

Panels

Some PC Tools programs have window panels. These panels are distinct regions on the screen that are not resizable or movable like windows, but that do have user-selectable fields. Central Point Backup and SI (System Information) are examples of programs with panels.



Navigating the Panels

1. If necessary, press Tab to activate the area of the panel you want to use.

   The active area is highlighted.

2. Press the quick key for the line you want more information about.

   For example, in SI, press I to get information about the drives attached to your system, or press Tab and then X to get more information about extended memory.

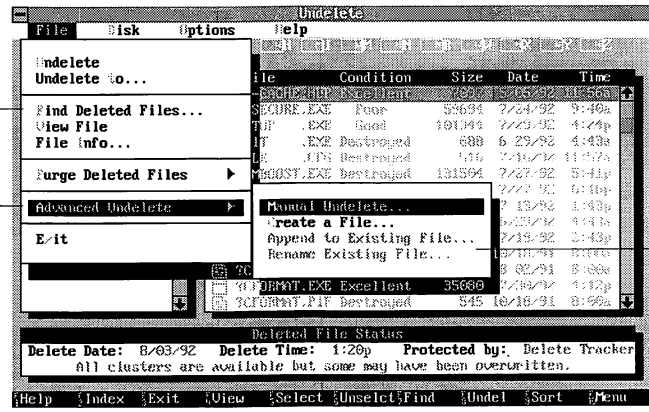
   or

- Click the line or button you want more information about.

  For example, in SI click **Drive Summary** to get more information about the drives attached to your system.

Menus

Most PC Tools programs have commands organized in pull-down menus on the horizontal menu bar. Menu entries are grouped according to the type of operation they perform. For example, the following pull-down menu shows commands for working with files in Undelete.



Command followed by an ellipsis calls a dialog box or another program

Command followed by ➤ calls a submenu

Dimmed command is not available

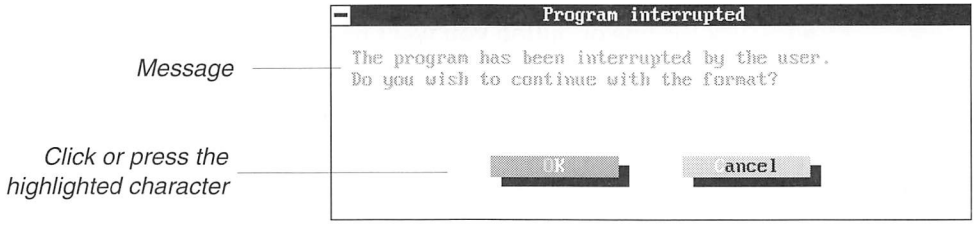
NOTE *Since you can change menus and menu commands in PC Tools Desktop using the Menu Editor, the menus and commands you see might be different than the original set. For more information about the default menu system in PC Tools Desktop, and how you change pull-down menu systems, see the* Configuring PC Tools Desktop *chapter in* Part 2 PC Tools Desktop.

Dialog Boxes

PC Tools programs display a dialog box when they require additional information or need to give you a message.

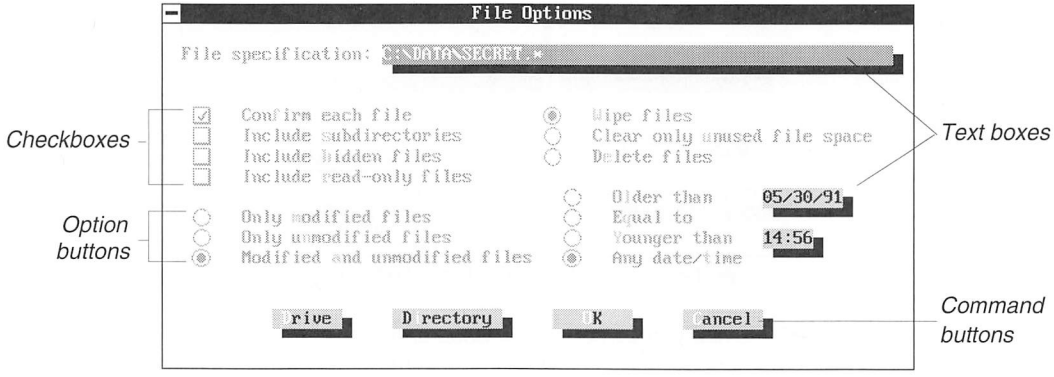
Message Dialog Boxes

Message dialog boxes contain messages and confirmation buttons so that you can respond to the message. For example, if you select a drive that does not contain a disk, you will see a message box similar to this:



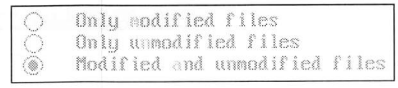
Command Dialog Boxes

Command dialog boxes allow you to supply any information needed by PC Tools. You can specify this information by typing it, selecting it from a list, picking options, and choosing commands to perform. The following command dialog box demonstrates several typical components:



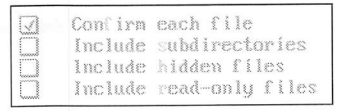
Command dialog boxes can contain any of the following parts that help you specify information needed by a feature you have chosen:

Option Buttons: Allows you to pick one option from a group. Selecting an option turns off all other options in the same group.



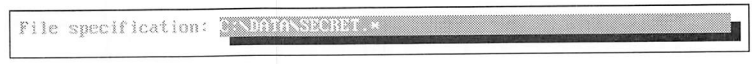
To select from a group of option buttons, first tab to the group. Then highlight the option you want and press Enter. You can also use the mouse to click the option button you want.

Checkboxes: Allow you to select multiple items in a list; each selected item has a √ in the box.



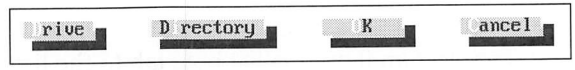
To select options in checkboxes, highlight an option you want and press Enter. Repeat for each option you want. You can also click each checkbox you want, or press Spacebar to toggle a checkbox on and off.

Text Boxes: Let you enter text, like a file name or text to search for.



To enter information in a text box, tab to (or click) that text box and type.

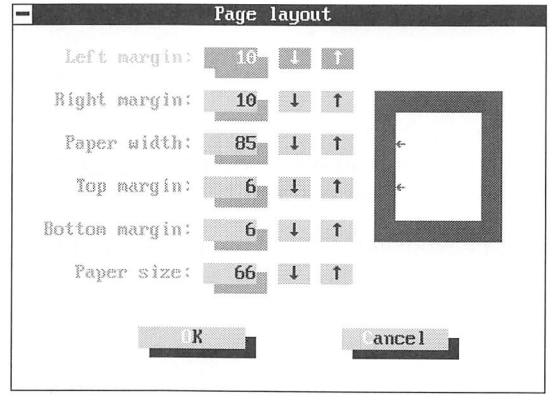
Command Buttons: Carry out actions.



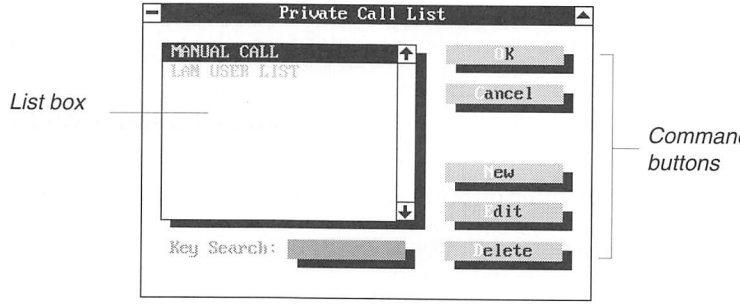
To choose a command button, tab to it and press Enter, or click it. One command button in each dialog box is highlighted—if you press Enter without tabbing to a button, the action in this highlighted button is performed.

Typically, a dialog box has at least two command buttons: **OK**, which lets you carry out the action of the dialog box, and **Cancel**, which closes the box without carrying out an action.

Arrow Buttons: Increase or decrease the value in an adjacent text box when clicked. The following dialog box allows you to change the value in several text boxes with arrow buttons.



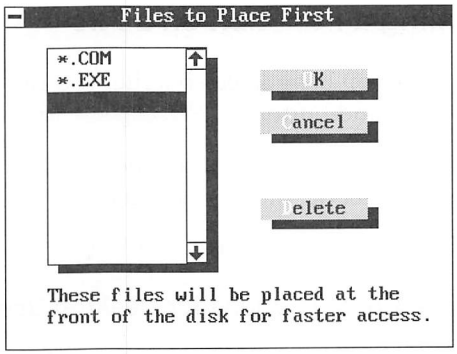
List Boxes: Contains a list of items you can scroll through and choose from. The Private Call List dialog box in Central Point Commute provides a good example of a list box:

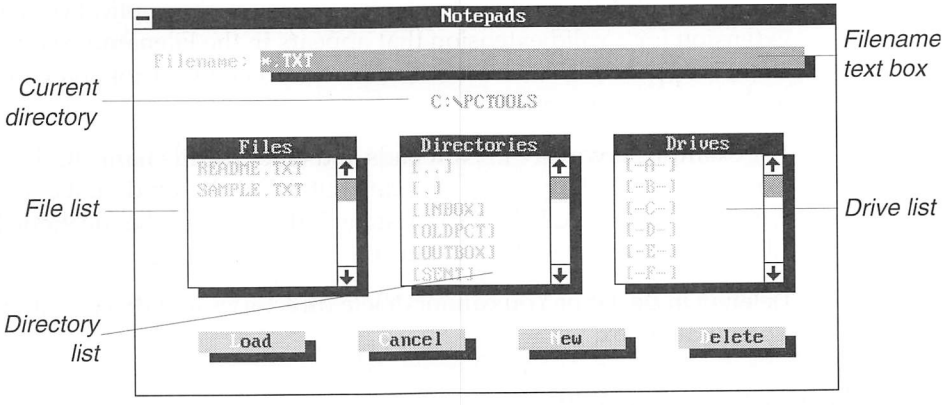


To select an item in a list box, tab to the list box, then highlight the item by pressing ↑, ↓, Pg Up, Pg Dn, Home, or End. Then choose a command button. You can also click the item you want, then click a command button. Or double-click the item if the command button you want is highlighted.

After selecting an entry from the list, press Alt O or choose **OK** to call it. Because **OK** is the highlighted command button in this dialog box, you could also press Enter to call the selected item, or double-click the item you want to call.

Editable List Boxes: Functions like a list box, and also allow you to change the items that are listed. The Files to Place First dialog box in Compress contains an editable list box that lets you edit items, add new items, and delete items.





Filename Text Box: Lets you specify the name of the file you want to work on. This text box can contain any of the following:

- A file name that you type in or that is selected in the list.
- A wildcard file name. If a wildcard name appears here, only files that match it are listed in the file list. By default, some programs display a wildcard file name of **.[default extension]*(for example, *.TXT in Notepads), but you can type in a different one.

File List: Lists files in the current directory.

Directory List: Lists all the subdirectories in the current directory. Directory names are surrounded by brackets; for example, [PCTOOLS]. [.] represents the current directory, and [..] represents the parent directory. You can change the current directory by selecting another name from the directory list.

Drive List: Lists the available drives. Drive names are surrounded by dashes and brackets; for example, [-C-].

Command Buttons: Carries out actions on the selected file.

Performing a Function on a File

After you have selected a file, you can perform any of the actions listed in the command buttons.

1. Type the name of the file you want to work on in the Filename text box or select the file from the file list.
2. Choose a command button.

Special Considerations for Desktop Users

Creating Files in Desktop Accessories: If you do not specify the name of a file you want to create in the text box, Desktop Accessories creates a default file named WORK. If you do not enter an extension, the application's default extension (or a valid extension that appears in the Filename text box at the time) is appended. To create a file name with no extension, type the file name and end it with a period.

For example, if you are in Notepads and enter the file name JOBS, the extension .TXT is appended to create JOBS.TXT. If you do not enter a file name, the name WORK.TXT is assigned. If you enter the file name JOBS, the file JOBS is created with no extension.

Deleting in Desktop: You cannot delete directories and drives with the File Load dialog box.

Advanced Procedures

The following procedures can be used in Desktop Accessories applications to perform more advanced functions.

Changing the Default Directory

The first time you use the File Load dialog box in a Desktop Accessories program, it displays the contents of the current directory. You can display the files in another directory by changing the current directory. The directory that is selected when you exit from the dialog box becomes the new default directory for that program.

▶ Type the directory's name in the Filename text box and press Enter.

For example, type

```
\NOTES
```

or

Select the directory from the directory list and press Enter.

Changing the Default File Name

You can change the default wildcard file name to display all or selected files in the current directory. If you exit from the dialog box without selecting a file or changing the file name back, the new file name becomes the default.

1. Type the new file specifications in the Filename text box.

   For example, you can enter `*.*` to select all files in the current directory or *.XYZ to select all files with the extension of .XYZ. Guidelines for entering file specifications are given in the next section.

2. Press Enter.

   All the files that match the new specifications are listed in the file list box.

3. If you want the new file name to become the default, exit from the File Load dialog box.

File Specifications

Many PC Tools programs allow you to use file specifications to specify one or more files whose names are alike in some way.

- All PC Tools programs let you use wildcard characters in a file specification. Wildcard characters are the question mark (?), which represents one character in a path or file name, and the asterisk (*), which can represent up to eight characters in a file name or three in an extension.
- Some programs let you use multiple specifications. This allows you to specify more than one file name or extension and exclude particular files.

File specifications can be uppercase or lowercase.

Multiple File Specification Format

Multiple file specifications use this format:

```
[-][path]filename
```

When using multiple file specifications, separate each one with a space.

File Spec	What it Does
-	Excludes files. This is optional.
path	Defines the location of the file(s) with respect to the root directory, with wildcards allowed. A drive letter plus a colon may be included. This is optional.
filename	Names a file, with wildcards allowed.

Examples

These examples show a few of the ways you can use file specifications in PC Tools.

File Spec	Finds These Files
`*.*`	All files.
`AUTOEXEC.BAT`	The AUTOEXEC.BAT file.
`*.DOC`	All files with the extension .DOC.
`*.WK?`	All files whose extensions begin with .WK—for example, .WK1, .WK2, and so on.
`\*.*  \DOS\*.*  \PCTOOLS\*.*`	All files in the root, \DOS, and \PCTOOLS directories.
`*.WK1 -\MISC\*.WK1`	All files with the extension .WK1 except those in the \MISC directory.
`PCTOOLS\*.TXT`	All files with the extension .TXT (text files) in the \PCTOOLS directory.

Using a Mouse

PC Tools fully supports a Microsoft (or compatible) mouse. This allows you to use the pull-down menus and overlapping windows.

To use a mouse, its driver must be installed in your CONFIG.SYS file or in your AUTOEXEC.BAT file before any PC Tools programs are loaded. Please see your mouse manual for more information.

NOTE *If you prefer to use your mouse left-handed, you can exchange the functions of the left and right mouse buttons by starting a program with the /LE option or by selecting Left-Handed Mouse in Mouse Options in PC Config. See the* Global PC Tools Command-Line Options *chapter in Part 4 in this volume.*

To	Do This
Click	Move the mouse to the selection you want. Press and release the left or right mouse button.
Double-click	Move the mouse to the selection you want. Quickly press and release the left or right mouse button twice.
Drag	Position the mouse pointer on the initial location, then hold down the left or right mouse button and move the mouse. Release the mouse button on the location you want.
Select or deselect	Position the mouse pointer on the item to select and click the left mouse button once. Or, press and hold the right mouse button, position the highlight bar over the first directory or file, then also press and hold down the left mouse button. Drag the cursor over any additional directories or files you want to select or deselect. Release both mouse buttons when finished.
Scroll through a window	Position the mouse pointer in the window you want to scroll. Press the right mouse button and drag the mouse to the top or bottom to scroll vertically. Drag the mouse to the left or right to scroll horizontally. You can also use the scroll bars on the right side or bottom of each window.
Activate a window or a distinct area in a window	Click anywhere in the window or area of the window you want to activate.
Pull down a menu	Click the menu name.
Choose a command	Click the command name on a menu, on the message bar, or in a dialog box. Or, to choose a command from a menu, click the menu name, then drag the cursor to the command you want to choose and release the mouse button.
Position the cursor or highlight an item	Click where you want to position the cursor or click the item you want to highlight.
Close a window, panel, or dialog box	Click the close box.
Close a program window (exit a program)	Double-click the close box in the upper-left corner, then choose Exit.

PC Config

After you install PC Tools, you can easily configure many program options again using PC Config.

Here's what you'll find in this chapter:

- **Starting PC Config** explains how to start the PC Config program.
- **Configuring Colors** explains how to change various color elements in PC Tools program screens so you can control every color aspect of the screens.
- **Configuring the Display** explains how to configure the display of screens in PC Tools programs.
- **Configuring the Keyboard** explains how to configure the speed and responsiveness of your keyboard when working with PC Tools programs.
- **Configuring the Mouse** explains how to configure your mouse when working with PC Tools programs.
- **Configuring Startup Programs** explains how to reconfigure TSRs and other startup options for PC Tools programs.
- **Configuring Password-Protected Programs** shows how to set passwords for selected PC Tools programs so that the password must be entered before running them.

Starting PC Config

- From the Configure menu in PC Tools Desktop, choose the option you want to configure:

  Display Option ➤ Colors

  Display Option ➤ Screen Size

  Speed ➤ Mouse Speed

  Speed ➤ Keyboard Speed

  Startup Programs

  Execution ➤ Execution Passwords

  For details on each of the configuration choices, see the appropriate section in this chapter.

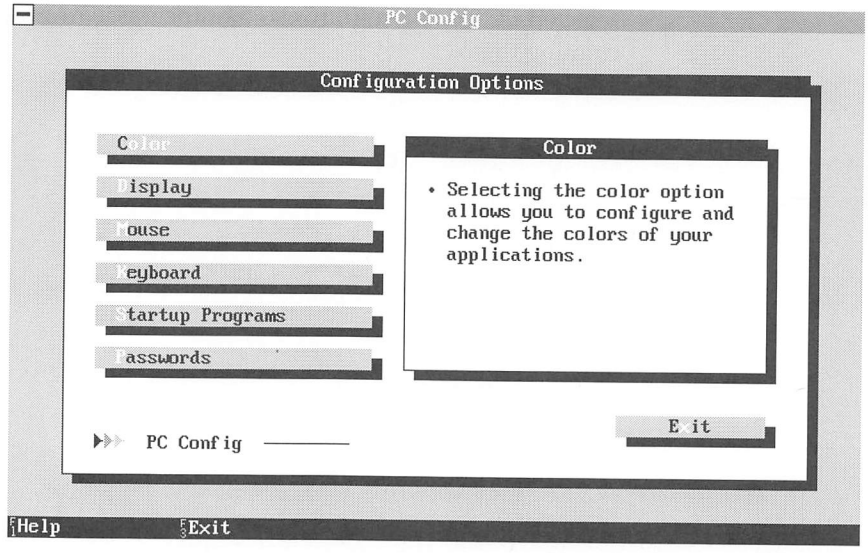
  or

1. From DOS, type

   PCCONFIG Enter

   Press F1 at any time for online help.

2. Choose what you want to change from the PC Config window.



Configuring Colors

PC Config gives you control over the color of every aspect of PC Tools screens. Changes that you make and save here are reflected in all PC Tools programs.

Use this option to do the following:

- Select a predefined color scheme that's more readable or pleasing than the default scheme.
- Customize one of the predefined color schemes.
- On EGA and VGA monitors, change the shade of any color in a color scheme.

About Color Schemes

All PC Tools programs employ certain standard screens and screen features. In PC Config, these are referred to as *categories*. Examples of categories are dialog boxes, help windows, menus, and the currently active window.

Each category has component parts, referred to as *elements*. For example, the elements of a dialog box are the title bar, buttons, and button text, You can set the foreground and background colors of each element independently.

All together, the color settings for all elements in all categories form a *color scheme*. The program includes default color schemes for color, monochrome, black and white, and LCD (liquid crystal display) monitors, and a variety of "decorator" color schemes for use on color monitors.

It's easiest just to select one of the predefined schemes. However, if you want a custom display, you can change the colors of a predefined scheme or use it as the starting point for a new color scheme of your own.

If you don't like a particular shade of color on the Color list and you have an EGA or VGA monitor, you can use the Palette button to change it. For example, you could change Cyan to another shade of blue (or even to green or magenta). Changes to the palette are reflected only in the currently selected color scheme.

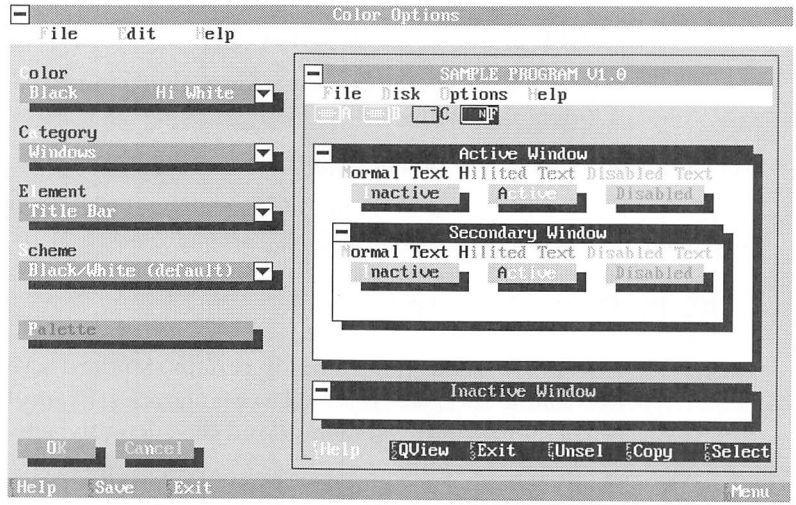
TIP *Changing the palette is a quick way to change the look of a color scheme.*

If you don't like your changes to a color scheme or to the palette, it's easy to discard them, or to return to one of the original default schemes supplied with the program. You can also delete a scheme—unless it's one of the four default schemes (color, black and white, monochrome, and LCD).

Press F1 for online help, including a definition of each category and element.

Choosing Colors

The Color Options window shows all the areas on the screen you can change.



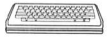
Selecting a Color Scheme

1. Select a color scheme from the **Scheme** list.

   The sample screen to the right of the screen shows how the selected category looks when this scheme is applied to it.

2. Choose **OK** to change to the new scheme for all PC Tools programs.

Changing an Existing Color Scheme



1. Select a color scheme from the **Scheme** list.
2. Select a category from the **Category** list.
3. Select an element from the **Element** list.
4. Use the arrow keys to select the background and foreground colors for this element from the **Color** list.

   You see the result of the change on the sample screen.

5. Repeat steps 3 and 4 for each element in this category.

or

1. Select a color scheme from the **Scheme** list.
2. Select a category from the **Category** list.

3. Click the element on the sample screen that you want to change.

   The color list drops down so you can select a color.

4. Double-click a foreground color, a background color, or both.

   The color list closes and you see the result of the change on the sample screen.

   or

   Click a foreground color, a background color, or both. You see the change on the sample screen. When the element is the way you want it, click the Color menu's close box.

5. Repeat steps 3 and 4 for each element in this category.

Saving Changes to a Color Scheme

1. Choose **Save Scheme** from the File menu or press F2 to save the scheme using its original name, and choose **Save** to confirm.

   or

   Choose **Save Scheme As** from the File menu to save it with a different name.

2. Enter the new name and choose **Save**.
3. Choose **OK** to change to the new scheme for all PC Tools programs.

Creating a New Color Scheme

1. Choose **New Scheme** from the File menu.
2. Enter a name for the new scheme.
3. Select the scheme to use as the starting point for this scheme.
4. Choose **OK**.
5. Select a category from the **Category** list.
6. Click an element in the sample screen, or select an element from the **Element** list.
7. Select the background and foreground colors for this element from the **Color** list.

   You see the result of the change on the sample screen.

8. Repeat steps 5–7 for each screen element you want to change.

9. Choose **Save Scheme** from the File menu or press F2 to save the scheme using the name you entered, and choose **Save** again to confirm.
10. Choose **OK** to change to the new scheme for all PC Tools programs.

Abandoning Changes to a Color Scheme or Palette

- Choose **Undo Changes** from the Edit menu to abandon all changes made since you last saved the color scheme you're currently editing.

  or

  Choose **Reset to Defaults** from the Edit menu to change the selected scheme back to one of the four default color schemes (color, black and white, monochrome, or LCD) as it was when the program was originally installed.

Deleting a Color Scheme

1. Select the color scheme you want to delete from the **Scheme** list.

NOTE *You can't delete the currently active scheme or the four default schemes (color, black and white, monochrome, and LCD).*

2. Choose **Delete Scheme** from the File menu.

Changing the Color Palette

1. Choose **Palette** in the Color Options window to change the shades of the colors listed on the **Color** list.
2. Move the arrows to the color you want to change.
3. Choose **Edit Palette**.
4. Move the arrows to the new shade to use for this color.
5. Choose **OK** to exit from from the Palette Table dialog box.
6. Repeat steps 2–5 for each color whose shade you want to change.
7. Choose **OK** to exit from from the Palette Colors dialog box.

Resetting the Color Palette

1. Choose **Palette** in the Color Options window.
2. Choose **Reset Palette** to change all colors back to the shades they had when you first installed the program.
3. Choose **OK**.

Configuring the Display

Use this option to

- Determine whether PC Tools programs use text characters or special graphics characters.
- Specify the number of lines of text displayed on the screen.

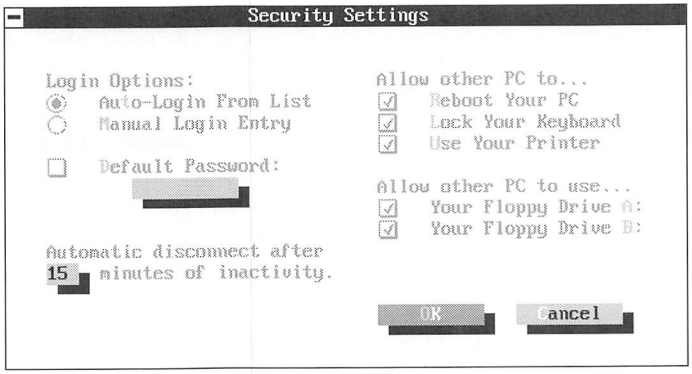
TIP *You can configure the display for individual PC Tools programs by starting them with command-line options. See the* Global PC Tools Command-Line Options *chapter in Part 4 of this volume for details.*

About the PC Tools Display

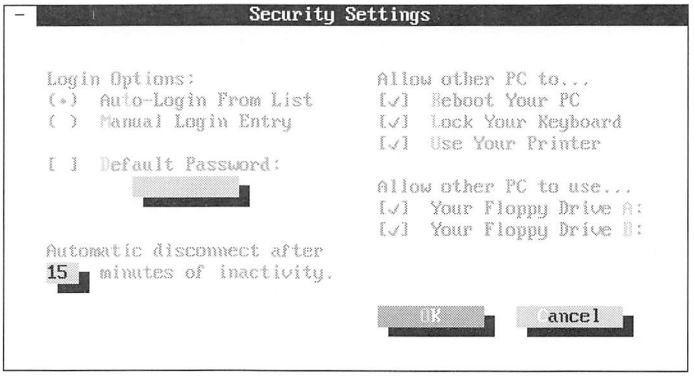
On a computer with an EGA or VGA monitor, PC Tools programs can use special graphics characters to make checkboxes, option buttons, and other screen features more attractive.

On monitors that can't display these special characters (such as CGA and monochrome), text characters like hyphens and parentheses are used to draw screen features. If you have one of these monitors, your screen won't look quite like the screens shown in PC Tools manuals—but both types of display work exactly alike.

This is a typical dialog box using graphic fonts:

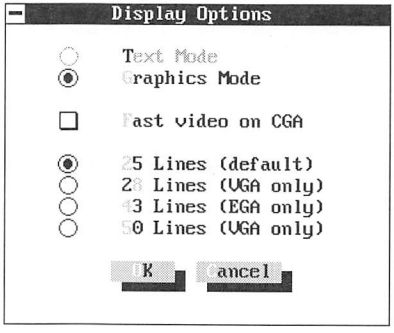


This is the same dialog box without graphic fonts:



Selecting Display Options

1. Select the display options you want to change:



Video Options: Determine which characters are used to display screen features. Graphics mode is only available if you have a VGA or EGA monitor.

Graphics Mode: Choose to use special graphics characters.

Text Mode: Choose to use regular characters like brackets and parentheses. (The advantage of using text characters is that they will print properly when you use Shift Prt Sc.)

Fast Video on CGA: Determines the screen retrace speed for CGA monitors. If this option is on, the screen will scroll more quickly, but it may cause screen flickering or "snow."

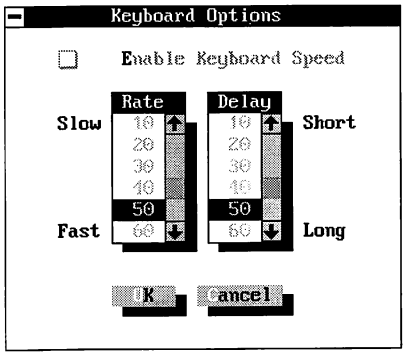
Display Mode: Controls the number of lines of text displayed on the screen. The **28 Lines** and **50 Lines** options require a VGA monitor, while the **43 Lines** option requires an EGA monitor.

2. Choose **OK** to close the dialog box and use these options for all PC Tools programs.

Configuring the Keyboard

Use this option to control the keyboard speed and delay.

1. Select the keyboard speed settings:



Rate: Determines how rapidly a keystroke is repeated when you hold down the key. The higher the number, the faster the key repeats.

Delay: Determines how long a key must be held down before it begins to repeat. The higher the number, the longer the delay.

2. To put your keyboard configuration choices into effect, choose **Enable Keyboard Speed.**
3. Choose **OK** to use these options for all PC Tools programs.

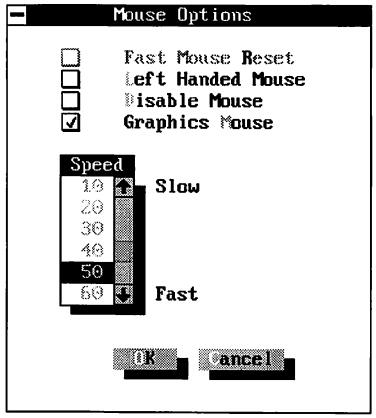
Configuring the Mouse

Use this option to do the following:

- Control mouse speed.
- Choose which mouse button and type of mouse cursor to use.

TIP *You can configure the mouse for individual PC Tools programs by starting them with command-line options. See the* Global PC Tools Command-Line Options *chapter in* Part 4 General Reference *in this volume for details.*

1. Select the mouse options you want to change:



Speed: Determines the rate at which the mouse cursor moves across the screen. The higher the number, the faster the mouse moves. (You'll probably want to increase this setting if Graphics Mouse is selected.)

Fast Mouse Reset: Provides optimal mouse operation. If your mouse doesn't work (especially using a PS/2-type mouse port after you have been running Windows 3.0), turn off this option.

Left Handed Mouse: Exchanges the left and right mouse buttons to accommodate left-handed people.

Disable Mouse: Disables the mouse in PC Tools utilities. Choose this option if you are using a mouse driver that is incompatible with PC Tools programs.

Graphics Mouse: Displays the mouse cursor as an arrow. Turn off this option to display the mouse cursor as a solid box. This option is available only if you have a VGA or EGA monitor.

2. Choose **OK** to use these options for all PC Tools programs.

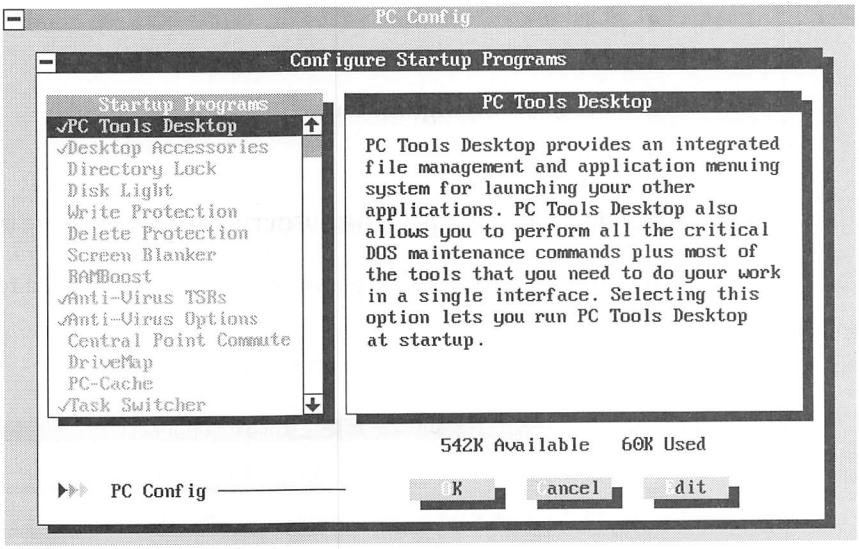
Configuring Startup Programs

You can change the way PC Tools startup programs are installed in memory at any time.

1. Select the options you want to change.

   If a password has been assigned, enter it and choose **OK**.

   The Configure PC Tools Startup Programs dialog box appears. The list box shows all the programs you can configure; additional options are available with some programs when you select its item. To the right of the list is a description of the program and what functions you are configuring. The amount of memory available and used is shown at the bottom right.


PC Config
Configure Startup Programs
Startup Programs
√PC Tools Desktop
√Desktop Accessories
Directory Lock
Disk Light
Write Protection
Delete Protection
Screen Blanker
RAMBoost
√Anti-Virus TSRs
√Anti-Virus Options
Central Point Commute
DriveMap
PC-Cache
√Task Switcher
PC Tools Desktop
PC Tools Desktop provides an integrated file management and application menuing system for launching your other applications. PC Tools Desktop also allows you to perform all the critical DOS maintenance commands plus most of the tools that you need to do your work in a single interface. Selecting this option lets you run PC Tools Desktop at startup.
542K Available 60K Used
PC Config
OK
Cancel
Edit

2. Choose **OK**.

   or

   Choose **Edit** to see the changes to be made to your AUTOEXEC.BAT and CONFIG.SYS file before saving.

   For more information about each of the program configuration options, see the *Configuring PC Tools Startup Programs* chapter in this part.

Configuring Password-Protected Programs

You may want to password-protect some programs that could damage a hard disk or its data if they are not used correctly. This feature is useful for system administrators who are responsible for configuring PC Tools for users of varying experience levels. (You may also find this feature useful if you have a computer at home and your children use it.)

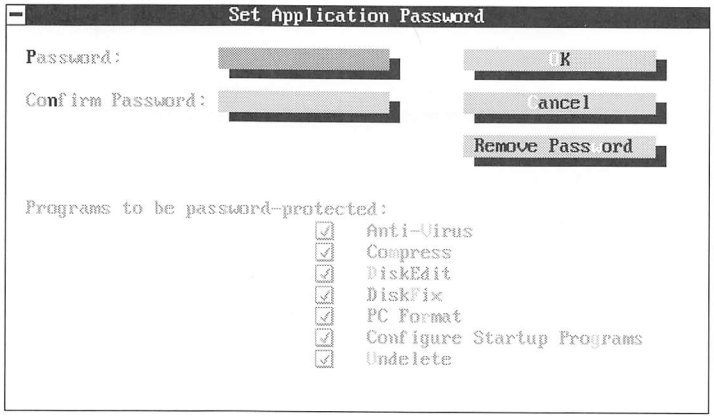
This option sets only one password for some or all of the following programs:

- Central Point Anti-Virus
- Compress
- DiskEdit
- DiskFix
- PC Format
- Program Configuration
- Undelete

Entering or Changing a Password

If you have already set a password, you are prompted to enter it before the dialog box appears.

1. Select which programs you want to protect.



For more information about these programs, see their individual chapters.

2. Type the password in the Password text box.

   Your password can be up to 16 characters and accepts numbers and letters. The program distinguishes between upper and lowercase letters.

3. Confirm the password by typing it again in the Confirm Password text box.

4. Choose **OK**.

   If you leave the Password text box blank, all files selected have their passwords removed.

When you attempt to run any of the specified programs, you are prompted for the password before the program starts.

NOTE *If you have scheduled a password-protected program, you either need to be present when the program starts or remove the password protection before the program is scheduled to start.*

Tips for Windows Users

You can run most PC Tools utilities from Microsoft Windows. In fact, this package contains two Windows utilities: Scheduler for Windows and TSR Manager.

PC Tools programs use a graphic-like interface, making them easy for people who are familiar with Windows to use. All PC Tools utilities that can be used with Windows are automatically installed in the program group, PC Tools, that is created by the PC Tools Install program.

Here's what you'll find in this chapter:

- **What Install Does** describes the basic procedures followed by the Install program for Windows applications and DOS applications that run under Windows.
- **General Tips** describes basic information you should know about installing PC Tools Windows applications and DOS applications that run under Windows.
- A section that describes how to run each of the following programs in Windows:

  Commute

  Compress

  Data Monitor

  DiskFix

  PC-Cache

  PC Secure

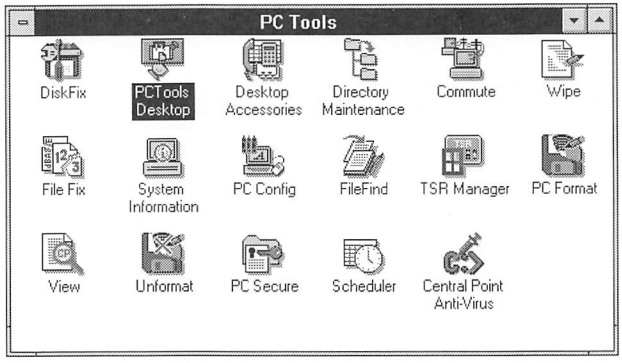
  PC Tools Desktop and Desktop Accessories

  Scheduling Software

  TSR Manager

  Undelete

  VWatch/VSafe



Windows classifies applications in two ways:

- **Non-Windows Applications:** DOS applications that can be run in the Windows environment, but do not require Windows to run. The DOS-based PC Tools programs installed in the PC Tools program group fall into this category. These utilities can be run from the PC Tools program group and are compatible with Windows.
- **Windows Applications:** Programs written exclusively to use Windows features. Each Windows application runs in its own window and behaves according to Windows standards. PC Tools includes the following Windows utilities:

  TSR Manager: Makes the PC Tools TSRs compatible with Windows. The TSR Manager allows PC Tools TSRs to display a message on the screen within Windows when they need to communicate with you. By selecting the TSR Manager, you can configure the TSRs.

  Scheduler for Windows: Lets you schedule Commute sessions, unattended backups in both DOS and Windows, DiskFix disk-integrity checks of your hard drive, and the sending and receiving of Email in Desktop.

What Install Does

Install copies the PC Tools programs you select to the \PCTOOLS directory (or the directory you specify) and also does the following:

- Modifies your PROGMAN.INI file to create a PC Tools program group that includes all PC Tools programs. (Your old PROGMAN.INI file is saved as PROGMAN.CP8.) Program Information Files (PIF) are installed for the DOS-based PC Tools utilities.

- Installs new keyboard and mouse drivers in your SYSTEM.INI file, which allows your PC running Windows to be controlled by another PC in a Commute session. (Your old SYSTEM.INI file is saved as SYSTEM.CP8.)
- Modifies (optionally) your WIN.INI file to automatically load the Scheduler for Windows and TSR Manager. (Your old WIN.INI file is saved as WIN.CP8.)

About PC Tools PIF Files

Install creates PIFs for all the PC Tools DOS utilities. A PIF is a special file that tells Windows how to run a non-Windows application. Each Central Point PIF uses the following defaults:

- **Full Screen:** Applications use the entire screen.
- **Exclusive Mode:** Applications have complete use of all computer resources while active.
- **Text Mode:** Applications run in text mode, using the defaults you selected in PC Config (for example, graphics fonts, mouse, and 25/43/50 line mode).

General Tips

If you run Windows on a 386 or higher machine, you can run DOS-based PC Tools utilities in their own windows. This gives them some of the advantages of the Windows environment. If you do this, use the **Display Options** command in PC Config to turn off the graphics fonts, or change the PIF file to run the utility with the /NF option.

If you are running on an IBM PS/2 or another computer with a PS/2-type mouse port, and you run a PC Tools utility after quitting Windows, you may find that your mouse is not responding. If this is the case, use the PC Config **Mouse Options** command to turn off the **Fast Mouse Reset** option, or run the PC Tools utility with the /PS2 command-line option.

Commute

Commute is powerful enough to run Microsoft Windows version 3.x on the PC you take control of. For ways to optimize the performance of Commute in the Windows environment, see *Part 3 Commute* in Volume 2.

You can run Windows while waiting for an incoming call from a Commute user. A dialog box will announce that a caller is trying to take control of you PC. You may accept or reject the call. While you are in Windows, you can also tell Commute to stop waiting for a call by accessing the TSR Manager.

Because Windows runs in graphics mode, each screen contains much more information than a screen in a DOS-based, text-mode application. This makes the transmission of each screen noticeably slower. If you are controlling a PC that is running Windows, you don't have to wait for the full graphics screen to be redrawn on your screen—you can type ahead because the keyboard is buffered. If the screen seems to be taking too long to reflect changes, try adjusting the video refresh rate using the Session Manager. (See *Part 3 Commute* in Volume 2 for details on how to do this.)

Commute needs special mouse and keyboard drivers on the system that is running Windows. The drivers, COMMMOU.DRV and COMMKBD.DRV, are copied to the disk during installation and installed in the SYSTEM.INI file.

NOTE *If you are using an Olivetti PC, use the COMMOLI.DRV for the keyboard. If you are using an HP Vectra, use the COMMHPV.DRV. For full details, please see* Part 3 Commute *in Volume 2.*

Compress

A disk optimization program like Compress should never be run from Windows. Compress optimizes your hard drive by moving files around on the disk to defragment them. Windows expects to find temporary files and other open files in a certain place. If Compress moves these files while Windows is running, data loss can occur.

If you attempt to run Compress from Windows, a dialog box prompts you to exit from Windows, then run Compress.

Data Monitor

The Write Protection, Directory Lock, and Delete Sentry features of Data Monitor are compatible with Windows. You can configure them in Windows by accessing the TSR Manager in the PC Tools program group.

Write Protection: A dialog box appears if you attempt to make changes to a write-protected area of your disk while you are using Windows. If the TSR Manager is not installed, you will not see a dialog box, but you will hear an alarm.

Directory Lock: A dialog box appears if you attempt to read a protected directory. You must enter the password to continue. If the TSR Manager is not installed, you will not see a dialog box, but you will hear an alarm.

Data Monitor's Disk Light and Screen Blanker are disabled while you are using Windows.

DiskFix

If you are running Windows, you can use the Repair a Disk option of DiskFix to analyze a drive and get a report of that analysis, but DiskFix will not let you make any repairs. Making repairs while a multi-tasking program is running could result in data loss.

If you attempt a suggested DiskFix repair when Windows is running, a dialog box prompts you to exit from Windows, then run DiskFix.

PC-Cache

Do not run both PC-Cache (shipped with PC Tools) and SmartDrive (shipped with Windows). Central Point Software recommends using PC-Cache because of its greater flexibility in DOS and Windows.

When PC-Cache is loaded and you run Windows, PC-Cache automatically disables write delay for the duration of the Windows session. When you exit from Windows, you should turn on write caching again by typing the following at the DOS prompt:

```
PC-CACHE /WRITE:ON Enter
```

If you run Windows, and PC-Cache is using an expanded memory cache of 300K or greater, PC-Cache automatically turns itself off for the duration of the Windows session. When you exit from Windows, re-enable PC-Cache by typing this at the DOS prompt:

```
PC-CACHE /ON Enter
```

WARNING Do not type `PC-CACHE /WRITE:ON` from a DOS prompt launched from Windows.

PC Secure

Since Windows allows multiple applications to be running at the same time in 386 mode, do not encrypt a file that is needed by any active application.

Scheduling Software

PC Tools applications and other programs can be scheduled to run, even if you are not at your PC. Central Point Scheduler for Windows is included to make scheduling these events easier in Windows:

- Central Point Backup
- Desktop Accessories' sending and receiving of electronic mail, and alarms to remind you of appointments
- Commute remote communications sessions
- DiskFix disk-integrity checks.

If an event is scheduled by a PC Tools DOS-based utility, you are notified of the event in Windows as long as the Windows Scheduler is running.

If you run Windows in real or standard mode and a scheduled event occurs, the scheduled event interrupts the current application, performs its task, and then returns to the interrupted application. A dialog box prompts you for any required information.

If you run Windows in 386 enhanced mode, an icon appears on your desktop to indicate the scheduled event is running. A dialog box prompts you for any required information.

NOTE *If a password has been set for DiskFix, and it is scheduled to run, the DOS icon appears in Windows before Diskfix will run. You need to click the icon and enter the password before the program will run at the scheduled time.*

TSR Manager

The TSR Manager is the PC Tools Windows application that enables the Central Point DOS TSRs to display a dialog box within Windows when they need to communicate with you. By selecting the TSR Manager from the PC Tools program group, you can configure the following utilities:

- VSafe/VWatch
- Data Monitor's Directory Lock
- Data Monitor's Write Protection
- Commute.

Undelete and Temporary Files

Windows in 386 enhanced mode uses temporary or permanent swap files to simulate RAM. If you have not installed a permanent swap file with the Windows Setup program, a temporary swap file is created each time you start Windows.

The drawback of using temporary swap files with programs such as Undelete is that they can overwrite the data you are trying to recover. However, this does not apply to data protected by the Delete Sentry method of delete protection. For this reason, use this method of delete protection with Windows.

In addition, to avoid filling your Sentry directory with Windows temporary files and to enhance overall Windows performance, you should create a permanent swap file as described in your *Windows User's Guide.* Before creating a permanent swap file, however, you should first undelete any deleted files you want to recover.

There is no benefit to protecting temporary files using the Delete Sentry method of delete protection. To eliminate the overhead of protecting these files, the following file types are excluded from protection:

- `*.IMG` (swap files)
- `*.SPL` (print spooling files)
- `*.SWP` (swap files)
- `*.WOA` (swap files).

See the *Undelete* chapter in *Part 3 Data Recovery and System Utilities* in this volume for details.

VWatch/VSafe

A dialog box appears in Windows if an infected, executable file is discovered. You can turn virus protection on or off with VSafe or VWatch by accessing the Windows TSR Manager in the PC Tools program group.

Creating Customized Installation Floppy Disks

This chapter describes how to create as many sets of installation disks as you need from a single, customized version of PC Tools.

NOTE *Before you install more than one copy of PC Tools, you must purchase a license approving the number of sites on which you can install PC Tools.*

Here's what you'll find in this chapter:

- **Creating a Customized Version of PC Tools** explains how to install and configure PC Tools on your computer and use that configuration as the default when building a set of custom installation disks.
- **Creating a Set of Custom Installation Disks** explains how to create sets of installation disks to use when copying the customized version of PC Tools to another computer.

NOTE *Central Point Software offers a number of services that aid Information Systems groups working with Central Point Software products. These services include priority technical support programs, technical training, and consulting services. Call (503) 690-8088 for more information about these services.*

Creating a Customized Version of PC Tools

Have enough floppy disks on hand to make an installation set. The number you need will vary, depending on how many PC Tools programs you installed.

1. Use the PC Tools Install program and choose **Custom Installation** to install PC Tools on your computer, selecting the options and configuration that you want your users to have.

   This customized version of PC Tools is used as the default configuration later when you run the Customize Install program (CInstall) to create the set of installation disks. Everything you configure and modify for your system is reflected on users' systems when PC Tools is installed from the set of installation disks.

2. Modify PC Tools Desktop as you want: customize the menus, configure execution passwords, change function keys, or any other customization.

   You can then run any other PC Tools programs you want to customize and set its configuration options according to the way you want users to operate the software. You access them from PC Tools Desktop. Then save configuration changes before exiting from each program. This way, you create customized versions of all PC Tools programs that look the way you want them to look, with specific options set the way you want for everyone.

3. Run the Customize Install program and answer the questions presented in dialog boxes.

   ▶ From DOS, type

   ```
   CINSTALL Enter
   ```

NOTE *You can use command-line options defined at the end of this section to control the behavior of Customize Install.*

Customize Install creates a FLOPPY subdirectory structure that allows for all media types (360K, 720K, 1.2MB, and 1.44MB) from which installation sets of any size can be created. To accomplish this, the FLOPPY subdirectory structure is built for the minimum media size, and then when you specify any other size, the correct combinations of files are extracted and copied on the correct disks.

Depending on your system configuration and how PC Tools has been installed, dialog boxes might appear, asking for the following information:

- If floppy subdirectories already exist, whether you want to use them, or if you want to create a new set of floppy subdirectories. More information about floppy subdirectories follows.
- The default installation path to be used. The default is C:\PCTOOLS.
- The Windows path, or the directory that contains the WIN.INI file for all users' systems. The default is C:\WINDOWS.
- Whether files should be compressed. Compression takes considerably longer, but it saves floppy disk space. Some files that must be executable directly from the floppy disks, such as DISKFIX.EXE and CPAV.EXE (Central Point Anti-Virus), will not be compressed.
- If your floppy disk drive is high density, whether you want high-density or low-density installation disks.

Creating a Set of Custom Installation Disks

When Customize Install finishes creating subdirectories and copying files to them, it asks if you want to create a set of the floppy installation disks.

1. Choose **Yes** to create the set.

   or

   Choose **No** to decline creating the set.

   You can create a set of floppy installation disks at any time by running the Customize Install program again. You don't have to create the master FLOPPY subdirectories again.

   If you decide to create the floppy installation disks, you'll be prompted for the information in the following steps.

2. Select the density of the disks you want to use, then choose **OK**.

3. Insert a floppy disk, then choose **OK**.

   Customize Install tells you how many disks it will take to create a complete set of floppy installation disks.

   After you insert a disk, Customize Install checks the integrity of the inserted floppy disk and looks for existing files. If it finds any, you are asked whether you want to delete the existing files.

   You must delete existing files, or else you must insert another floppy disk.

   If you insert an unformatted floppy disk, the program asks if you want to format the disk.

   Customize Install renames the volume of the disk and then copies all the files that can fit onto the disk. When the first disk is full, you are prompted for the second disk, and so on, until all the disks for the installation set have been created.

   After the first installation set is created, Customize Install asks if you want to create a second set. You can create multiple sets of the same configuration, or you can quit Customize Install.

Creating Additional Installation Sets

Once master FLOPPY subdirectories exist in the PC Tools installation directory, you can run Customize Install again to create additional sets of installation floppy disks or sets of different media sizes. You'll be notified that the subdirectories already exist.

- Choose **OK** to use the existing subdirectories to make floppy disks.

  Proceed as outlined in the "Creating a Set of Custom Installation Disks" section earlier in this chapter. You can create multiple installation sets if you want.

  or

  Choose **Erase** to erase the master FLOPPY subdirectories and create a new set.

Once you have chosen a floppy drive for creating custom floppy disks, Customize Install remembers this drive letter the next time you run it and does not give you the option to change it. You can override the drive by specifying a command-line option. See the *Install Command-Line Options* chapter for details.

Installing PC Tools on and from a Network

Network administrators can install PC Tools utilities on a Novell NetWare server (Version 2.12 or later) or on an IBM PC LAN server.

Here's what you'll find in this chapter:

- **Before You Begin a Network Server Installation** describes the network privileges and license agreement you need.
- **Installing on a Network Server** explains how to install and configure a shared version of PC Tools on a network and enable users to customize their workstations to use this shared copy.
- **Installing and Configuring Interactively from a Network Version** explains how to install a copy of PC Tools on a network so that users can install and configure PC Tools interactively from the network server to their workstations. This method is faster than installing from floppy disks.
- **Installing Automatically from the Network Version** explains how to install a copy of PC Tools on the network so that it can be installed automatically by network users to their workstations, eliminating the need for the individual user to do anything. This section also describes the commands you can use when designing and scripting an Installation Command file for use with Batch Install.

Before You Begin a Network Server Installation

You must purchase as many copies of PC Tools as there are network users of PC Tools, or contact us to purchase a site license. See the license agreement for details.

Before you install on a network server, you should

- Have supervisor privileges on a network server.
- Be familiar with network concepts and commands.

NOTE *Central Point Software offers a number of services that aid Information Systems groups working with Central Point products. These services include priority technical support programs, technical training, and consulting services. Call (503) 690-8088 for more information about these services.*

Installing on a Network Server

No matter which network solution you are planning, you must first install PC Tools on a network server, using the Install program.

1. Place the installation disk in drive A.

   This example uses drive A. If you are installing from another drive, substitute that drive letter for A.

2. From DOS, type

   `A:INSTALL` Enter

   Install scans memory for viruses. If the program finds a virus in memory, it prompts you to remove it.

3. Enter the name of the directory that will contain PC Tools files.

   Install detects if it is working on a network server.

4. Enter the name of the directory that contains network Windows files if it exists.

5. Choose one of the following options:

   ▶ Create master FLOPPY subdirectories.

   Select this option if you plan to have network users install PC Tools form the network server to their workstations.

   From the master FLOPPY subdirectories, users can install copies of PC Tools to their local workstations. The existence of the master FLOPPY subdirectories makes interactive installation from a network server possible: Install does not prompt for original distribution floppy disks, but instead it installs the product directly from the master FLOPPY subdirectories to users' workstations.

   or

   Do not create master FLOPPY subdirectories.

   Select this option if you want users to run PC Tools from the shared version on the network server.

Install then copies the program files from the floppy disks to the directory on the network server you specified.

Once PC Tools is installed on the network server, a system supervisor can provide access to network users these ways:

- Assign access rights to the shared network version of PC Tools and let users customize network workstations individually. See "Configuring a Shared Version of PC Tools on a Network Server" following for details.
- Allow users to install and configure interactively from the network directory in which master FLOPPY subdirectories exist to their workstations. See "Installing and Configuring Interactively from a Network Version" later in this chapter for details.
- Allow users to install non-interactively from a network directory in which master FLOPPY subdirectories exist. See "Installing Automatically from the Network Version" later in this chapter for details.

Configuring a Shared Version of PC Tools on a Network Server

Once you install PC Tools on a network server, you can let users access the single network copy from their own workstations, without having a personal copy of PC Tools on each workstation.

1. Assign all users privileges to read and open files in the network PC Tools directory.

   For a Novell network, these privileges are:

Novell NetWare 286	Novel NetWare 386
Read From File	Read
Open Existing Files	File Scan
Search For Files	

2. For each user, create a directory either on the network or on their local workstations to hold the user-specific files that are created by PC Tools.

   Users need to have full privileges to their own directories on the network.

   ▶ If the user-specified files are on the network, create a directory on the network named \HOME (or another appropriate name) that contains a subdirectory named for each user's login name. The examples in the following steps assume you are using \HOME on the network.

3. On each workstation, set the environment variable PCTOOLS to point to the user directory you have created.

   - For Novell networks, use the SYSCON command to add a line like the following to the System Login script:

     ```
     SET PCTOOLS="H:\\HOME\\%LOGIN_NAME"
     ```

     where *H:* is the drive that contains the user-specified files, and *LOGIN_NAME* is the name of the user directory.

   - For IBM PC LAN networks, add a line like the following to each user's AUTOEXEC.BAT file before the commands that log the user on to the network:

     ```
     SET PCTOOLS=H:\HOME\login
     ```

     where *H:* is the drive that contains the user-specified files, and *login* is the name of the user directory.

4. Add the directory where you installed the PC Tools programs to each user's search path.

   - For Novell networks, use the SYSCON command to add this line to the System Login script:

     ```
     MAP INS Sn:=server\volume:path
     ```

     where *n* is the search drive number; *server*, *volume*, and *path* specify the directory where you installed PC Tools.

   - For IBM PC LAN networks, add the PC Tools drive and directory to the PATH command in each user's AUTOEXEC.BAT file.

     For example, you might install PC Tools in G:\PCTOOLS, and a user's current PATH command might look like this:

     ```
     PATH=C:\BIN;F:\MAIL;
     ```

     In this case, you would change the path to look like this:

     ```
     PATH=C:\BIN;F:\MAIL;G:\PCTOOLS;
     ```

5. Add the directory where user's individual files are located to each user's search path.

NOTE *Do not map a search drive if you are not renaming the UNDELETE and FORMAT commands.*

Users need access to this directory because batch files are copied to it. These batch files are used when users choose to rename the DOS commands UNDELETE and FORMAT to use the PC Tools programs Undelete and PC Format.

- For Novell networks, use the SYSCON command to add this line to the System Login script:

```
MAP INS Sn:=server\volume:path
```

where *n* is the search drive number; *server*, *volume*, and *path* specify the directory where the user's individual files are located.

- For IBM PC LAN networks, add the drive and directory where user's individual files are located to the PATH statement in each user's AUTOEXEC.BAT file.

For example, you might set up the user's individual files in G:\HOME\NAME, and a user's current PATH command might look like this:

```
PATH=C:\BIN;F:\MAIL;G:\PCTOOLS;
```

In this case, you would change the path to look like this:

```
PATH=C:\BIN;F:\MAIL;G:\PCTOOLS;G:\HOME\USER;
```

6. Run Install from the network installation and then you are able to customize PC Tools on that individual workstation.

Installing and Configuring Interactively from a Network Version

Network users can follow these steps to install and configure PC Tools programs directly from the network to their workstation hard disks, without having to handle floppy installation disks.

This procedure assumes you have installed PC Tools on the network server following the steps described in the "Installing on a Network Server" section earlier, and created master FLOPPY subdirectories.

1. From the workstation, change directories to the network installation directory (for example: `H:\PCTOOLS`).

2. From DOS, type:

   INSTALL Enter

   Follow the instructions on the screens. For more information about what happens during installation, see the *Installing PC Tools* chapter in this volume.

Installing Automatically from the Network Version

Use this procedure to specify the installation options for users to install copies of PC Tools programs directly from the network to workstation hard disks automatically, without having to handle floppy installation disks or interact with the program.

All of the options that users normally respond to in dialog boxes while running Install are provided through commands in the Installation Command file. (A sample PCTOOLS.ICF file is included.) Errors are reported on the screen or to an optional error log file, whose path is specified through a command in the Installation Command file.

To perform a Batch Installation:

1. Install a version of PC Tools on the network server with master FLOPPY subdirectories. This procedure is described in "Installing on a Network Server" earlier in this chapter.
2. Design an Installation Command file that defines the PC Tools configuration to be installed on the workstation disks.
3. Run the Batch Install program identifying the Installation Command file.

These steps are explained in detail in the following sections.

Designing an Installation Command File

The Installation Command file specifies the configuration of the PC Tools applications installed on the workstation disk by Batch Install.

The format of an Installation Command file is similar to a Windows profile file (.INI) in structure, form, and syntax. A default Installation Command file called PCTOOLS.ICF, which contains commands for installing a complete copy of PC Tools Version 8 is included. Once you become familiar with the commands in PCTOOLS.ICF, you can create and customize individual Installation Command files to define any number of possible configurations of PC Tools. Use a text editor, such as the Desktop Accessories Notepads, to edit the Installation Command file.

You can find an explanation of the sections of the Installation Command file in the "Contents of the Installation Command File for Batch Install" section later in this chapter.

Running Batch Installation

- From DOS, type

  `BINSTALL filename` Enter

  where *filename* is the name of the Installation Command file. Use the full path for the Installation Command file, if it is not in the current directory.

NOTE *You can use command-line options defined in the* Install Command-Line Options *chapter to control the behavior of Batch Install.*

Using Batch Install in Users' Login Scripts

Another way you can use Batch Install is to include it in the user's login script so that it automatically updates the user's workstation copy of PC Tools with the latest version of PC Tools on the network every time the user logs in. This is especially useful when the version on the network has been upgraded, for example when you receive new virus signature files.

You need to include the full path to the Batch Install file and the full path to the Installation Command file. For example:

```
H:\MAILBOX\PCTOOLS\BINSTALL  H:\MAILBOX\PCTOOLS\DATA\PCTOOLS.ICF
```

Contents of the Installation Command File for Batch Install

The Installation Command file contains all of the options that users normally respond to in dialog boxes while running Install. This file also specifies the configuration of PC Tools startup programs.

Errors can be reported on the screen or optionally in an error log file, whose path is specified through a command in the file.

A default file called PCTOOLS.ICF is included for you to modify (you can rename the file to any name you want). Use the following guidelines when editing the file:

- An Installation Command file can contain up to five sections, each of which is marked with a fixed name enclosed in square brackets. The name identifies the section. All sections are optional except the Environment section.

- Each section contains a set of related commands. Commands can be one of two types: stand-alone or associated with options specified after an equal sign. They can appear in any order within a section.
- Section names, commands, and command options are case-insensitive. Any amount of space can surround the equal sign, associating an option to a command.

Environment Commands

The Environment section begins with its name enclosed in square brackets.
`[ENVIRONMENT]`

This section specifies all the options that Batch Install needs to know about before it can begin copying PC Tools files to the workstation. This section is required for any Installation Command file to run. If the section is missing, Batch Install terminates, displaying an error message.

`ON_ERROR=CONTINUE|QUIT`

If you specify CONTINUE upon receiving a non-catastrophic error, Batch Install continues processing.

If you specify QUIT, Batch Install stops processing upon receiving any error, and the error is logged in the log file. CONTINUE is the default if the ON_ERROR command is omitted.

`LOGFILE=`*`path`*

Specifies the name and path of a log file to which errors are sent. If you do not specify a path, the file is saved in the current directory. If you don't include a file extension, .LOG is appended. For example,

```
LOGFILE=C:\TMP\ERRORS
```

creates the ERRORS.LOG file in the C:\TMP directory.

`FLOPPY_DIRECTORY=`*`path`*

Specifies the drive and directory name that contains the master FLOPPY subdirectories. For example, if PC Tools is installed on a network in H:\UTILITY\PCTOOLS, and \PCTOOLS is the directory from which you created the master FLOPPY subdirectories, you include the following line in the environment section of the PCTOOLS.ICF file:

```
FLOPPY_DIRECTORY=H:\UTILITY\PCTOOLS
```

`INSTALLATION_DIRECTORY=path`

Specifies the disk and directory that will contain the new copy of PC Tools or overwrite an existing copy. This is an optional command and if omitted, Batch Install does the following:

If the	Then
Product environment variable is defined (PCTOOLS)	The full path defined by the environment variable is used. The environment variable must point to a valid path or Batch Install logs an error and quits.
Product environment variable is not defined	The default installation directory is C:\PCTOOLS.
Specified directory does not exist	It is created automatically.

`UNINSTALL [=ALL]`

Use the UNINSTALL command only if you want to remove some or all PC Tools programs. If specified parts of PC Tools are to be uninstalled, the Parts section must be present. If the Parts section is missing, nothing is removed. (The Parts commands are described in the following section.)

If all of the PC Tools programs are to be removed, the UNINSTALL command must include the =ALL option. In this case, the Parts section must not be present.

If you use the UNINSTALL command, the SAVEOLD command must not be present.

If you have specified PC Format or Undelete to be removed, the BOOT_DRIVE command in the Options section must also be present. No other commands are permissible in the Options section when the UNINSTALL command is present. If you uninstall PC Format or Undelete, the original DOS names are automatically reinstated.

`SAVEOLD`

Specifies whether to save old configuration files in a directory called OLDPCT off the installation directory.

`WINDOWS_DIRECTORY=path`

Specifies the directory where Windows is configured. It contains the WIN.INI file. This is an optional command and if omitted, it is assumed that you do not want to install the TSR Manager, Commute keyboard and mouse drivers, PIF files, and the Windows PC Tools group file.

HELP_FILES|NO_HELP_FILES

Specifies whether to copy help files for all parts of the PC Tools programs you selected to install. HELP_FILES is the default.

WRITE_PROTECTION|NO_WRITE_PROTECTION

Specifies whether to honor write-protection status of write-protected files. If WRITE_PROTECTION is on and Batch Install encounters a write-protected file, Batch Install quits and issues an error message. WRITE_PROTECTION is the default.

Parts Commands

The Parts section begins with its name enclosed in square brackets. [PARTS]

This section is not necessary if you are going to perform a complete install or uninstall of PC Tools.

Each command consists of the name of a PC Tools application or function.

Each application name must follow these conventions:

- Each line contains one name only.
- You need to include the name of every PC Tools program you want to install.
- Names cannot contain spaces.
- Names can be composed of any combination of uppercase or lowercase characters.

The list of PC Tools program names follows:

```
PC_TOOLS_DESKTOP
DESKTOPACCESSORIES
ANTI_VIRUS
CPAV_TSRS
BOOTSAFE
CP_BACKUP
FLOPPY_ENGINE
TAPE_ENGINE
SCSI_ENGINE
COMMUTE
COMPRESS
CP_TASK
CP_MENU
DATAMON
DELETE_PROTECT
WRITE_PROTECT
DIR_LOCK
DISK_LIGHT
SCREEN_BLANKER
DIRMAINT
DISK_EDITOR
DISKFIX
EDISK
ITLFAX
FILEFIND
FILEFIX
VIEW
BINSTALL
CINSTALL
MIRROR
NETMESSAGE
PARK
CACHE
PC_CONFIG
PC_FORMAT
DRIVEMAP
PC_SECURE
SCHEDULE
WIN_SCHEDULE
RAMBOOST
SYSINFO
UNDELETE
UNFORMAT
WIPE
WNTSRMAN
```

Options Commands

The Options section begins with its name enclosed in square brackets.

```
[OPTIONS]
```

This section lets you specify those options that are available in Install after you copy the files. All options are supported except the creation of the emergency disk, which requires the prompting for a floppy disk and cannot be supported in batch mode.

`BOOT_DRIVE=`*`drive`*`:`

Specifies the letter of the drive where you boot your system. This command must be included if you use the RENAME_FORMAT or RENAME_UNDELETE command, or else Batch Install quits.

`RENAME_FORMAT`

Renames the DOS version of the Format command to FORMAT!.COM or FORMAT!.EXE and creates a batch file in the main installation directory called FORMAT.BAT that calls the PC Tools Format program instead. If the RENAME_FORMAT command is omitted, the commands are not renamed.

If you are uninstalling PC Format, the DOS version of the Format command is named back to FORMAT.COM or FORMAT.EXE and the batch file is removed. You do not need to specify the RENAME_FORMAT command.

If you include the RENAME_FORMAT command, you must also include the BOOT_DRIVE command in the Options section. This is because Batch Install needs to know the boot drive in case you have included the DOS Format command in the root directory of your boot drive.

`RENAME_UNDELETE`

Renames the DOS version of the Undelete command to UNDELET!.EXE and creates a batch file in the main installation directory called UNDELETE.BAT that calls the PC Tools Undelete program instead. If the RENAME_UNDELETE command is omitted, the command is not renamed.

If you are uninstalling Undelete, the DOS version of the Undelete command is named back to its original name and the batch file is removed. You do not need to specify the RENAME_UNDELETE command.

If you include the RENAME_UNDELETE command, you must also include the BOOT_DRIVE command in the Options section. This is because Batch Install needs to know the boot drive in case you have included the DOS Undelete command in the root directory of your boot drive.

CONVERT_BACKUP

Searches all hard drives for FastBack and Norton Backup files, then converts them for use with Central Point Backup.

CONVERT_MENUS

Searches all hard drives for a Fifth Generation Systems' Direct Access menu file, and converts it to use with PC Tools Desktop.

WNSCHED

Specifies automatic loading of the Windows Scheduler each time Windows starts. Adds WNSCHEDL.EXE to the LOAD line in the WIN.INI file.

CPSCHED= *hhmm hhmm hhmm hhmm*

Allows up to four events to be scheduled on the user's computer. The scheduled times are specified by the time format hhmm [A | P]. If the AM/PM indicator is missing, the 24-hour clock is assumed. The four events must be specified in the following order: Central Point Backup, DiskFix, Compress, and Central Point Anti-Virus. If you do not want one or more events, use a 0 in the time field.

The following is an example with all events scheduled:

```
cpsched=4:00p 5:00p 6:00p 7:00p
```

A zero indicates no event is scheduled. For example, the following shows Central Point Backup, Compress, and Central Point Anti-Virus events scheduled:

```
cpsched=4:00p 0 6:00p 7:00p
```

Configuration Commands

The Configuration section begins with its name enclosed in square brackets.
[CONFIGURATION]

This section lets you specify programs that can be started automatically when the workstation PC starts up. This section is not necessary if you do not want to load any programs upon startup.

Every Configuration command must follow these conventions:

- Each line begins with the name of the PC Tools program or the name of a feature in a PC Tools program that is configured.
- Names and options can be composed of any combination of uppercase or lowercase characters.

- Commands can contain more than one option. For example, when you configure the fax feature in Desktop Accessories, you can specify the fax directory as well as the CAS directory.
- If a command has more than one option, the options must be separated by commas. For example:

```
COMMAND=option, option, option
```

- If an option has a value, it is separated from the option by an equal sign. The following example is a PC-Cache option with a value:

```
CACHE_SIZE=2048
```

- If a command spans two or more lines, each continuation line must end with a backslash character (\). The backslash character must be the last character on the line.

An example Configuration section follows:

```
[CONFIGURATION]
ANTI-VIRUS = VSAFE
DATAMON =    SCREEN_BLANKER, DIRECTORY_LOCK,\
             WRITE_PROTECT,\
             DISK_LIGHT, DELETE_SENTRY
PC-CACHE =   EXTENDED, CACHE_SIZE=2048,\
             WIN_CACHE_SIZE=1024, WRITE_DELAY, LOW,\
             NO_BATCH, MINI, QUIET, PAUSE
MIRROR=DRIVES=CD
SCHEDULER
CPTASK = EXTENDED
PC_TOOLS_DESKTOP
```

In the preceding example, some commands consist of only the program name, which indicates it is to be loaded at startup. Other commands have additional options that specify how you want the program configured.

The following are the conventions used to define command syntax. Do not type the brackets and braces used in the following descriptions, since they are used only to define the syntax.

- Options inside brackets [ ] indicate the entire expression is optional. If no option is specified, the default is used.
- Options inside braces { } indicate that you must specify one of the options separated by vertical bars.

DESKTOP_ACCESSORIES

Loads Desktop Accessories.

COMMUTE[={LARGE_COMMUTE|SMALL_COMMUTE}]

Specifies that Commute should load, using a small or large amount of memory. LARGE_COMMUTE is the default.

ANTI-VIRUS[={VSAFE|VWATCH}]

Loads VSafe or VWatch each time you start your computer. VSafe is the default.

DATAMON =[SCREEN_BLANKER],[DIRECTORY_LOCK],[WRITE_PROTECT],
[DISK_LIGHT],[DELETE_TRACKING|DELETE_SENTRY]

Loads Data Monitor and specifies whether to activate Screen Blanker, Directory Lock, Write Protect, Disk Light, Delete Tracker or Delete Sentry.

PC-CACHE [=[CONVENTIONAL|EXTENDED|EXTENDED_BIOS|EXPANDED],
[CACHE_SIZE=*nnnn*],[WIN_CACHE_SIZE=*nnnn*],
[NO_WRITE_DELAY|WRITE_DELAY],[LOW],[NO_BATCH],
[MINI],[QUIET],[PAUSE]]

Loads PC-Cache each time you start your computer.

The first group of options lets you specify the type of memory PC-Cache will use. If unspecified, PC-Cache makes its best determination.

You can add the following optional commands to specify the behavior of the cache:

CACHE_SIZE=*nnnn*

Creates a cache of the specified size, where *nnn* is the size of the cache in kilobytes.

WIN_CACHE_SIZE=*nnnn*

Loads PC-Cache into memory and causes the cache to shrink immediately, if possible, as soon as you run Windows. The *nnn* part of the option represents the size of the cache under Windows and makes more memory available for Windows in any mode (real, standard, or enhanced).

NO_WRITE_DELAY|WRITE_DELAY

Loads PC-Cache into memory and specifies whether to activate delayed writing to disk. WRITE_DELAY is the default.

LOW

Prevents PC-Cache from loading into DOS 5's upper memory blocks (UMBs), even if available. Forces PC-Cache to load itself into conventional (low) memory. Normally, PC-Cache uses upper memory if available.

NO_BATCH

Specifies that only one sector of data is transferred at a time.

MINI

Reduces the load size (the amount of conventional memory PC-Cache uses to load into) by 2K to 4K, depending upon the size of the cache. This does not change the size of the data cache, however.

QUIET

Disables the status display that appears when the cache loads and when the cache options are changed.

PAUSE

Specifies that execution will pause at the status display when PC-Cache is loaded.

```
CPTASK  [=[EXTENDED|EXPANDED],
        [SWAP_SIZE=nnnn],[LOW],[CTRL]]
```

Loads Task Switcher each time you start your computer.

The first group of options lets you specify whether to load Task Switcher into expanded or extended memory. If neither type of memory is specified, Task Switcher uses the hard disk for storing its swap file.

You can add the following optional commands to specify the behavior of Task Switcher:

SWAP_SIZE=*nnnn*

Lets you specify how much disk space to allocate for temporary swap files.

LOW

Forces Task Switcher to load into conventional memory.

CTRL

Lets you use Ctrl instead of Alt for the hotkey that pops up Task Switcher.

SCHEDULER

Loads Scheduler each time you start your computer.

MIRROR[=DRIVES=*cde...*]

Loads Mirror and specifies the drive to save the system information, where *cde...* represents a series of drive letters. You can specify multiple drives. If no drive is specified, the drive where you boot your system is the default.

PC_TOOLS_DESKTOP

Runs PC Tools Desktop each time you start your computer.

FAX[=[FAX_DIRECTORY=*directory*],[CAS_DIRECTORY=*directory*],
[LOCAL_FAX_BOARD|REMOTE_FAX_BOARD]]

Loads the fax driver each time you start your computer.

FAX_DIRECTORY specifies the directory to use to send and receive fax messages. CAS_DIRECTORY specifies the directory where the fax software is stored.

If fax functionality is configured, you can specify whether to use a fax board in the local computer or in the network server. LOCAL_FAX_BOARD is the default.

SEARCH[=NETWORK[,{NO_SEPARATE_GROUPS|SEPARATE_GROUPS}]]

Specifies whether to search the hard drive for applications and add them to the PC Tools Desktop Menu Window. If you use the network option, you can add one of the following options:

NO_SEPARATE_GROUPS|SEPARATE_GROUPS

Specifies whether to use separate groups when adding applications to the PC Tools Desktop Menu Window. SEPARATE_GROUPS is the default.

BOOTSAFE[=DRIVES=*cde...*]

Specifies that BootSafe (which is not a TSR) runs at system startup and protects the specified drives against boot sector and partition table virus infection, where *cde...* represents a series of drive letters. You can specify multiple drives. If no drive is specified, the drive where you boot your system is the default.

CPAV[=DRIVES=*cde...*]

Specifies that Central Point Anti-Virus is run at startup to scan the specified drives for viruses, where *cde...* represents a series of drive letters. You can specify multiple drives. If no drive is specified, the drive where you boot your system is the default.

DRIVEMAP

Loads DriveMap.

RAMBOOST

Loads RAMBoost.

Network Administrator Commands

The Network Administrator section begins with its name enclosed in square brackets. [NET_ADMINS]

Commands in this section list up to 20 network administrators who can receive notification when a user encounters an error running Batch Install. If you specify network administrators, they are sent a broadcast message wherever they are logged in and a user encounters an error. All errors are also reported to the log file, regardless of whether this section is included in the Installation Command file. This section is not necessary if you do not want to notify network administrators of errors individually.

Each name on the list should follow these conventions:

- Each line contains one pair of names only: the first name identifies the network server name, the second identifies the name of the network administrator.
- Names cannot contain spaces.
- Names on the same line must be separated by a comma, a space, or both.
- A name cannot contain more than 42 characters.
- A name is case-insensitive.

Here's a list of examples providing all syntactically valid combinations:

```
CPS, GUSTAV_MAHLER
CPS_SOUTH, ANTON_BRUCKNER
EMAIL ANTONIO_VIVALDI
TECH_SUPPORT, GEORG_FRIEDRICH_HANDEL
TEST_LAB, WOLFGANG_AMADEUS_MOZART
WINDOWS, SERGEI_PROKOFIEV
```

Using PC Tools Programs in a Network Environment

This chapter describes features of the specified programs that work in a network environment.

Here's what you'll find in this chapter:

- **Central Point Anti-Virus** explains how to configure Central Point Anti-Virus with different option settings for each user. This section also explains how to receive network messages in the program, how to assign access rights to reports files, and how to use BootSafe command-line options to run Central Point Anti-Virus from a batch file.
- **Central Point Backup** describes the user privileges needed to read the tree and the devices that are supported on a network.
- **Central Point Commute** describes the kinds of networks Commute is compatible with and its recommended loading order.
- **Compress** explains that Compress is intended for local hard disks, not network drives.
- **Data Monitor** explains that all Data Monitor features are supported on networks, except Delete Tracker. This section also describes how to configure Data Monitor features for network users.
- **Desktop Accessories** describes the special uses for Appointment Scheduler, Fax Telecommunications, and Databases on networks.
- **Directory Maintenance** explains the special uses for Directory Maintenance on networks.
- **DiskFix** explains that DiskFix is intended for local hard disks, not network drives.
- **DriveMap** explains that DriveMap works with Novell or Net BIOS networks.
- **FileFind** describes the specific network search features in FileFind.
- **Net Message** explains that Net Message is for sending messages to users on Novell NetWare servers.
- **PC Format** explains that PC Format cannot be used to format a network drive.

- **PC Secure** explains that PC Secure is compatible with networks that provide standard DOS file system support.
- **PC Tools Desktop** lists the commands that are not available for use on a network drive from PC Tools Desktop.
- **System Information** describes the commands that are especially useful on network drives.
- **Undelete** explains that you can undelete files on a Novell network drive that have been protected by Delete Sentry or Novell NetWare's method of delete protection.
- **VSafe/VWatch** explains how to configure VSafe or VWatch on users' systems when they are connected to a network.
- **View** explains how to modify users' login scripts if they are using the Network Courier Email program on a Novell NetWare server.

Central Point Anti-Virus

Central Point Anti-Virus is compatible with all DOS and Windows-compatible networks and network software.

If you install Central Point Anti-Virus on a network drive for access by multiple users, you can set different option configurations for each user and specify an environment variable that allows the program to find the local configuration settings.

1. Select the scanning options you prefer and choose **Save Settings on Exit** from the Options menu.

   The configuration options you selected are saved in the PCTOOLS\DATA directory in a file named CPAV.INI.

2. Copy the CPAV.INI file to a floppy disk and go to the user's computer you want to set up.
3. Copy the CPAV.INI file to a directory on the user's computer.
4. Edit the AUTOEXEC.BAT file to include the following line:

   ```
   SET CPAV=<path>
   ```

   substituting the path of the CPAV.INI file for *<path>*. For example, if you copied the CPAV.INI file to the \PCTOOLS\DATA directory on drive C, type

   ```
   SET CPAV=C:\PCTOOLS\DATA\CPAV.INI
   ```

When the user runs Central Point Anti-Virus from the network drive, the configuration options in the local CPAV.INI are used.

The CPAV.INI file controls all option settings for CPAV.EXE. You can change an option's setting by editing the CPAV.INI file. A "0" indicates the option is off; a "1" indicates the option is on.

Receiving Network Messages

If Central Point Anti-Virus detects a virus and the user is logged in to a Novell network server, a message indicating the user's name and the drive containing the virus appears on the server's system console.

Novell Network users can configure Central Point Anti-Virus to notify the network administrator or any other network user when it detects a virus on the user's computer.

To specify the user to be notified when a virus is detected:

1. Choose **Send Network Messages To** from the Configure menu.
2. Type a valid network user name in the Network Messages dialog box.

   By default, no user name is specified.
3. Choose **OK**.

   If the Central Point Anti-Virus program finds a virus on your machine, a message appears on the screen of the user you specified.

Assigning Access Rights to Report Files

When you select the Create Infection Report option in Central Point Anti-Virus, a REPORTS subdirectory is created under the directory from which the Central Point Anti-Virus program was executed. This directory stores detailed information about any virus found.

When Central Point Anti-Virus is run from a network drive, the Activity Report shows NET: and the user name of the person who ran the program. To use this feature, assign read and write access rights to the \PCTOOLS\REPORTS directory for all users. Also, assign read and write access rights to the ACTIVITY.CPS file for all users.

BootSafe

BootSafe (with the /A option) and CPAV.EXE can return DOS error codes under certain circumstances. (These are sometimes called *exit codes*.) This is useful when using the IF ERRORLEVEL statement in batch files.

The following examples are given to demonstrate how these can be used.

Example One: If CPAV.EXE or BootSafe finds a virus, they return an error code of 86. An error code of 0 is returned if a virus is not found. If you want to run Central Point Anti-Virus from a batch file, the following example shows you how to insert a message when this situation arises:

```
ECHO OFF
CPAV /L /S
IF NOT ERRORLEVEL 86 GOTO END
ECHO VIRUS FOUND! CONTACT ADMINISTRATOR IMMEDIATELY!
:END
ECHO SCAN COMPLETE
```

When this batch file is executed, it runs Central Point Anti-Virus and scans all local drives except A and B. If the program finds a virus during the scan, then afterward the following message appears:

```
VIRUS FOUND! CONTACT ADMINISTRATOR IMMEDIATELY!
SCAN COMPLETE
```

You can substitute any legal DOS commands, program calls, or batch file calls for the message.

Example Two: BootSafe returns an error code of 2 when it is time to run a scan as indicated by the /T option. The error code of 0 is returned if it is not time to run a scan.

For example, if a network administrator specifies that users scan their local drives only once a day, then each user's AUTOEXEC.BAT file will need the following lines added:

```
BOOTSAFE C: /T1 /A
IF ERRORLEVEL 2 CPAV /L /S
```

When these statements are executed, it runs Central Point Anti-Virus and scans all local drives except A and B one time per day. Even if the user reboots several times, Central Point Anti-Virus won't scan the disk again.

Central Point Backup

On a Novell network workstation, directories are displayed on the tree only if the user has read privileges for that directory. During a restore, if a user does not have write privileges for a directory being restored, a message tells you that access is restricted.

Central Point Backup backs up Novell network bindery files and trustee information to SCSI devices only. If files are open during the backup, Central Point Backup either waits for the file, sends the user of the file a message (NetWare 286 only), or skips the file and continues. It is best if network drives are backed up after hours, when everyone has logged off.

Central Point Commute

You can use Commute on a Novell or NetBIOS network to transfer files directly to another PC, without having to use the server as an intermediate step. You can also take control of another PC to diagnose and solve problems, without leaving your desk, using a network.

Here is the recommended order for loading memory-resident programs on the PC that you're going to take control of:

1. Network software and other device drivers
2. Commute
3. Other TSRs

For Novell networks, it's only necessary to load the network driver, IPX.COM, to establish a connection using the network. It's not necessary to load the network shell or to be logged into the network. This is useful to know in situations where you need to conserve memory.

However, when only IPX is loaded, the following limitations apply:

- You can only connect with users who are logged on to the server you are physically attached to.
- The LAN Server List is not available.

Compress

Compress is intended for local PC disk drives. Compress will not work on a Novell network file server, on any network drive, or on OS/2 volumes. Compress also does not work on a drive that has been mapped using DriveMap.

Data Monitor

Write Protect, Disk Light, Delete Sentry, Directory Lock, and Screen Blanker can be used with a network. To use any of these Data Monitor options on a Novell network drive, you must load Data Monitor into memory after the Novell network drivers.

The Delete Tracker method of delete protection is the only Data Monitor option that you cannot use with a network.

Delete Protection

Before users can use the Delete Sentry method of delete protection on a network volume, the network supervisor should use Data Monitor to configure Delete Sentry for that volume. The hidden \SENTRY directory is created automatically. The supervisor should then assign users the following rights in the \SENTRY directory:

NetWare 286	NetWare 386
All rights except Parental	All rights except Access Control and Supervisory

The Delete Tracker method of delete protection is not available on network drives.

Directory Lock

The Directory Lock password is encrypted into the DATAMON.EXE file, which has the following consequences for network users:

- To run DATAMON.EXE from a network drive and assign a Directory Lock password, a user must have write privileges in the directory where Data Monitor is installed.
- If multiple users run Data Monitor and use Directory Lock from the same network drive, all must use the same password. Each user can specify different directories to encrypt, however.
- To use individual passwords, each user must install a copy of Data Monitor in a separate network directory or on the local hard drive.

Desktop Accessories

The Appointment Scheduler, Fax Telecommunications, and Databases have special uses on a network.

Appointment Scheduler

If you're using a local area network, Appointment Scheduler files can be stored either on a local hard drive or on a network drive.

When using a network, individuals who use Desktop Accessories and have access to the network can form groups and make appointments for those groups. An individual can belong to multiple groups. You can be running Desktop Accessories from your local hard drive or from the network to use this capability.

Creating a Group

Each group must be associated with a directory on the network. This directory will contain appointment information for the members of the group.

1. The network administrator should create a directory on the network for each group.

   For example, the directory might be H:\GROUPS\EXEC or H:\GROUPS\ADMIN.

2. The administrator should assign appropriate privileges to group members. To make group appointments, a user must have write privileges. To pick up appointments, a user only needs read privileges.

   If the members of the group are the only ones who have read/write privileges to the directory, then no one outside of the group can gain access to the appointments made for the group.

Fax Telecommunications

To use Fax Telecommunications with a fax board that's located in a networked computer, follow this procedure.

1. Install the fax board and fax board software in a computer on the network.

   Refer to your fax board manual for instructions. The board cannot be installed in a network server.

2. Create a directory on the network to hold fax files before they are actually sent by the fax board software. Give network users who use Desktop Accessories to send and receive faxes all privileges in this directory except supervisory privileges.
3. At the computer that contains the fax board, start PC Config.
   - Choose **Startup Programs**.
   - Select the **Fax Driver** option.
   - Enter the location of the fax directory and specify that the fax board is located in this computer.
4. At each fax user's workstation, either you or the user should do the following:
   - Start PC Config.
   - Select **Fax Driver**.
   - Enter the location of the fax directory, then choose **OK**.
   - Select **Fax Board is in Remote Network Workstation**, then choose **OK**.
   - Save the changes to the AUTOEXEC.BAT file.

Databases

If you are running Desktop Accessories on a network, multiple users can view (read) a database at the same time, even if they do not have write privileges. However, only one network user at a time can open a database with write privileges.

A network user with only read privileges can always read any database, but can never write to one. A network user with write privileges can write to any database unless it has already been opened by another network user with write privileges. In that case, a message states that another user is writing to the database.

Directory Maintenance

The program can maintain directories on most network drives (Novell NetWare Version 2.10 or later, LANtastic, and IBM PC LAN, to name a few).

You can use the Prune and Graft command to move directories and their files and subdirectories between network drives.

You can view the access privileges, owner, and creation date for a network directory, but you can't change its attributes.

DiskFix

DiskFix is for local PC disk drives and cannot be used to diagnose problems on on a Novell network file server, on any network drive, or on OS/2 volumes. DiskFix also does not work on DriveMap drives or drives mapped using DriveMap.

DriveMap

DriveMap allows PCs that are linked on a Novell or NetBIOS network (or a serial or parallel cable) to share their disk drives and printers with each other. DriveMap provides a gateway for PCs and laptops to access drives on a network without having to be logged on the network.

FileFind

On Novell networks, you can search by and modify all Novell file attributes, all additional date ranges, file owner, and last modifier.

When you're specifying network drives to be searched, the program shows you the server name, volume name, and current directory for Novell network drives. It also alerts you if you're about to search the same physical volume more than once.

Found files are listed so that you can compare their sizes, dates, and attributes (including Novell network attributes). You can also view the contents of a file to make sure that it's the one you want.

NOTE *Searching files for text on a Novell network does not affect the searched files' last access date.*

Net Message

Net Message provides information about network users, volumes, and groups, and lets you send brief messages across a network on networks using Novell NetWare Version 2.10 or later.

PC Format

PC Format cannot be used to format a network drive.

PC Secure

PC Secure is compatible with standard network systems that provide standard DOS file system support.

PC Tools Desktop

The following PC Tools Desktop commands are not available for use on a network drive:

- Rename Volume
- Directory Sort
- Disk Information
- Disk Map
- File Map
- Search Disk
- Verify Disk
- View/Edit Disk
- Format Data Disk
- Make System Disk

If you are connected to a Novell network and use PC Tools Desktop to look at the network server, it will display in the tree list only directories that you have at least read privileges for. This makes PC Tools Desktop easy to use on a network, because you see only directories you use instead of all the directories on the server.

System Information

System Information provides information about network users, volumes, and groups, and lets you send brief messages across a network on networks using Novell NetWare Version 2.10 or later.

The **Physical Details** option in the Logical Drive Detailed Information dialog box is not available for network drives.

Undelete

You can undelete files on a Novell network drive with Delete Sentry or Novell NetWare's method of delete protection. You can undelete files on any other network drive only if the files are protected by the Delete Sentry or Delete Tracker method of delete protection.

VSafe/VWatch

If you want to make sure that all users accessing the network are using VSafe or VWatch, copy the file ISCPSTSR.EXE from the PC Tools distribution disk to the \CPAV or \PUBLIC directory, and add the following lines to the END of the system login script:

```
#ISCPSTSR
IF "%ERRORLEVEL"<>"99" THEN EXIT "OUT.BAT"
```

When a user attempts to log in to the network, ISCPSTSR checks the system to see if either VSafe or VWatch is installed memory-resident. If VSafe or VWatch is not resident, the user is not allowed to log in. You can use any Novell NetWare command in place of OUT.BAT.

For example, you can use the EXIT command to exit to a batch file that installs VSafe or VWatch automatically on the user's computer, and then restart the computer.

Configuring VSafe for Network Use

To have virus protection on networks with VSafe, you need to load VSafe with the /N option *before* the network drivers:

```
VSAFE /N
```

NOTE *You may not be able to remove some TSR programs from memory after using this option, since TSRs are removed in the reverse order in which they are installed. You cannot remove any TSRs loaded before VSafe until you remove VSafe from memory.*

Configuring VWatch for Network Use

To have virus protection on networks with VWatch, install VWatch *after* network drivers, but before logging in. For example,

```
IPX
NETx
VWATCH
LOGIN
```

See the *Tips for Network Administrators* chapter in *Part 1 Central Point Anti-Virus* in Volume 2 for more technical information about using Central-Point Anti-Virus on networks.

View

If you are using the Network Courier Email program on a Novell NetWare server and you run View from the DOS prompt, you may see this message:

```
Could not find the file:  SPWNVIEW.EXE
```

This occurs because NetWare searches a directory used by Network Courier before it searches the directory where PC Tools is installed.

To make the PC Tools directory the first one searched, use Novell's SYSCON utility to add the following command to the end of your system login script:

```
MAP INS S1:=C:\PCTOOLS
```

(For C:\PCTOOLS, substitute the drive and directory where PC Tools is installed.)

Install Command-Line Options

This chapter describes command-line options for all installation programs: Batch Install (BInstall), Customize Install (CInstall), and Install.

Batch Install

You can use the following command-line options with Batch Install.

```
BINSTALL filespec [/FC] [/?]
```

Option	What it Does
/FC	Forces a copy of PC Tools programs onto the floppy disk even if a copy of that program already exists.
/?	Displays command-line options on screen.

Customize Install

You can use the following command-line options with Customize Install:

```
CINSTALL [/BPD:x] [/BPF:x] [/LIMIT:x] [/S:f]
         [/?] [/VIDEO]
```

Option	What it Does
/BPD:*x*	Generates a beep prompt of *x* milliseconds. The default duration is 100 milliseconds. This can be useful to remind you when it's time to switch floppy disks.
/BPF:*x*	Generates beep prompt of *x* Hz. Default Hz. is 1000.
/LIMIT:*x*	Limits the number of bytes that can be written to a 360K disk to *x* bytes.
/S:*f*	Specifies the installation floppy drive letter *f*.
/?	Displays command-line option information on the screen.
/VIDEO	Displays command-line help for the video/mouse options.

Install

You can use the following command line options with Install:

```
INSTALL  [/BPD:x] [/BPF:x] [/FC] [/FL] [/UNINSTALL]
         [/DISKREQ] [/?] [/VIDEO]
```

Option	What it Does
/FL	Creates master FLOPPY directories while installing PC Tools. One directory is created for each installation disk.
/UNINSTALL	Removes PC Tools programs that have been installed. You can uninstall by typing UNINSTALL.
/DISKREQ	Shows the disk space requirements for individual functions in the Select Tools to Install dialog box.

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About PC Tools Desktop

Part 2 of this volume explains how to use PC Tools Desktop and configure its many features. PC Tools Desktop integrates all the PC Tools utilities into one easy-to-use package with full drag-and-drop support. With PC Tools Desktop, you can:

- **Access all your applications from the Menu Window:** PC Tools Desktop automatically searches your computer's drive and creates a menu of applications that are installed on your system. Most popular applications are recognized and added to the Menu Window, including PC Tools.
- **Access all PC Tools utilities from pull-down menus:** A handy Tools menu provides quick access to each of the PC Tools programs. The Accessories menu quickly takes you to Desktop Accessories applications, including Notepads, Outlines, Databases, Appointment Scheduler, several different calculators, and a variety of telecommunications options.
- **Launch multiple applications from within PC Tools Desktop:** PC Tools Desktop works with the Task Switcher, allowing you to have up to eight DOS programs running at the same time and switch between them.
- **Use drag and drop for easy execution of programs and commands:** PC Tools provides comprehensive drag-and-drop capabilities, which enable you to easily manage your files and directories. See "Using Drag and Drop" later in this chapter for more information.
- **File viewers:** View file contents before launching them, using one of the more than 45 built-in file viewers.
- **Customize the commands you use:** Change the way PC Tools Desktop works for you by redefining all function keys, changing commands in pull-down menus, and adding new pull-down menus and commands.
- **Complete file- and disk-management functions:** Use PC Tools Desktop to view, edit, copy, move, compare, rename, delete, and print files. You can also edit, copy, compare, search, rename, verify, and format system and data disks.
- **Locate files based on specifications you provide:** You can quickly locate a single file or groups of files that meet the criteria you specify.

- **Organize and manage directories:** Customize your directory listing by collapsing and expanding directory branches and sorting directories. You can also perform directory maintenance functions, such as adding a directory, renaming a directory, deleting a directory, and pruning and grafting, without leaving PC Tools Desktop. You can even delete an entire directory and its contents in one easy step.

Using Drag and Drop

With drag and drop, you can

- **Drag files or directories to a program.** For example, you can click on a group of files, drag them to the Central Point Backup application in the Menu Window, drop them, and start a backup of the files. See the *Running Applications from PC Tools Desktop* chapter in this part for more information.

NOTE *Central Point Backup and Central Point Anti-Virus always accept drag-and-drop files. Other applications can be configured to accept drag-and-drop files as well. See "Program Item Information" in the* Managing Applications *chapter in this part for more information.*

- **Copy files or directories to another directory or drive.** Click on a file or directory and drag it to the directory or drive icon you want to copy to. You can select multiple files and copy them at one time. When you copy a directory, all its files and subdirectories are copied with it. See the *Managing Files* chapter in this part for more information.
- **Move files or directories to another directory or drive.** Press Ctrl, click on a file or directory and drag it to the directory or drive icon you want to move it to. You can select multiple files and move them at one time. When you move a directory, all its files and subdirectories move with it. See the *Managing Directories* chapter in this part for more information.
- **Drag files or directories to a function key.** For example, define a function key as a Quick View (QView) key. Click on a file and drag it to the QView function key. The file opens in the appropriate format.

For information on defining function keys, see "Defining Function Keys" in the *Configuring PC Tools Desktop* chapter in this part.

Navigating with Drag and Drop

When you drag a file around the PC Tools Desktop main window, a banner appears attached to the cursor. When you point to a location where drag and drop is not supported, the banner says "Can't Drop Here." When you point the cursor at a location where drag and drop is supported, the banner changes to indicate the action that will occur when you drop the file. For example, when you drag a directory to a drive icon, the banner changes to "Copy Directory." Or, if you press Ctrl and drag a group of five files to a directory icon, the banner changes to "Move 5 Files."

You can drag a file or group of files to the drive line, to the Menu Window, any open Tree List, or to a function key. If you use a dual-list display, you can drag a file from one File List to the other.

You can drag a directory to the drive line, the Menu Window, another directory in the Tree List, or a function key. If you use a dual-list display, you can drag a directory from one Tree List to the other. When you move or copy a directory, all its files and subdirectories are moved or copied with it.

You can drop an entire directory and its subdirectories to the Central Point Backup or Central Point Anti-Virus application in the Menu Window to start a backup or an anti-virus scan.

Starting PC Tools Desktop

This chapter explains how to start PC Tools Desktop.

You can configure the features of PC Tools Desktop to fit your own requirements. See the *Configuring PC Tools Desktop* chapter in this part for more information.

Starting PC Tools Desktop

- From DOS, type

  PCTOOLS Enter

  The screen clears and PC Tools Desktop reads the directory of the selected drive. When all directories have been read, the main PC Tools Desktop screen appears.

TIP *Install the Task Switcher to take advantage of the ability to run as many as eight applications and switch between them easily. See the* Task Switcher *chapter in* Part 3 Data Recovery and System Utilities *in this volume for more information.*

If you want PC Tools Desktop to come up reading a specific drive, follow the command with the drive letter. For example, to have PC Tools Desktop come up with drive B selected on the drive line, type `PCTOOLS B:` Enter.

For PC Shell Users

PC Tools Desktop is an enhancement of the PC Shell program you've used in earlier versions of PC Tools. PC Shell can be used as it has been in the past. You can even configure the menus to appear as they did in either PC Shell Version 6 or Version 7.

In this manual, whenever you see instructions to type PCTOOLS, you can substitute PCSHELL.

See "Customizing PC Tools Desktop Menus" in the *Configuring PC Tools Desktop* chapter in this part for more information on customizing menus.

Starting PC Tools Desktop as a Memory-Resident Application

NOTE *To gain maximum benefits of the new PC Tools Desktop features, install the Task Switcher and run PC Tools Desktop in standalone mode. The instructions in this section are provided for compatibility with previous versions of PC Tools.*

When you run PC Tools Desktop memory-resident, you can use the hotkey to open and close it while running other applications.

Starting PC Tools Desktop Memory-Resident

- From DOS, type

  `PCTOOLS /R` Enter

  PC Tools Desktop takes a moment to load into memory, then the sign-on screen lists the hotkey used to start PC Tools Desktop, and the current memory available to other programs.

TIP *If you want PC Tools Desktop to come up reading a specific drive, follow the command with the drive letter. For example, to have PC Tools Desktop come up with drive B selected on the drive line, type* `PCTOOLS B: /R` Enter.

Starting PC Tools Desktop After Loading it Memory-Resident

- Press Ctrl Esc to start PC Tools Desktop.

  This is the standard PC Tools Desktop hotkey. To change the hotkey, see "Changing the Hotkey" following.

  After pressing the hotkey, the screen clears and PC Tools Desktop reads the directory of the default drive. A dialog box displays the number of directories that have been read so far. When all directories have been read, the main PC Tools Desktop screen appears.

Changing the Hotkey

You can change the default hotkey sequence to be Ctrl plus one of the function keys, F1 through F10. This is useful if another program is already using the Ctrl Esc hotkey sequence.

- Before starting PC Tools Desktop, type the following from DOS:

  `PCTOOLS /R /Fn` Enter

  n must be a number from 1 to 10. For example, if you typed /F5, you would press Ctrl F5 as the hotkey to enter and exit from PC Tools Desktop.

Removing PC Tools Desktop from Memory

When PC Tools Desktop runs memory-resident, you remove it from memory at the DOS prompt.

- From DOS, type

  `KILL` Enter

  This command also removes Desktop Accessories, Commute, and Central Point Scheduler from memory if they were the last memory-resident programs you loaded.

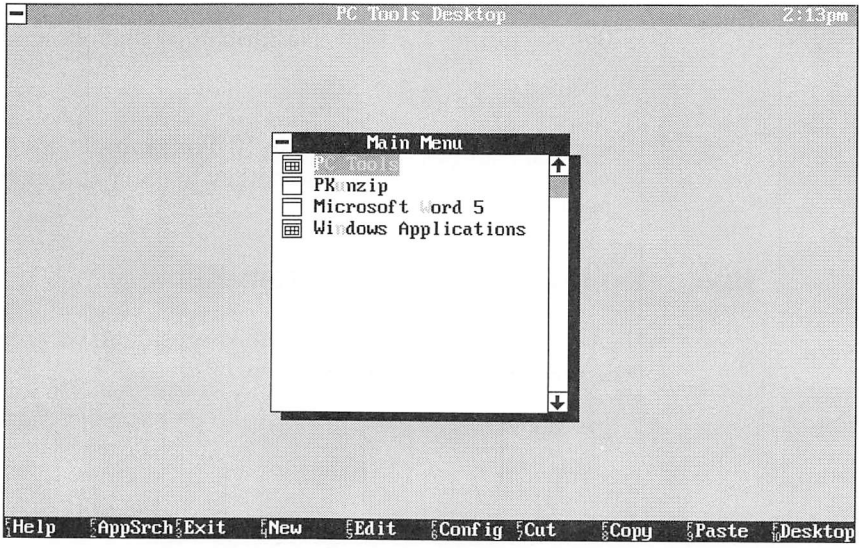
NOTE *If you have loaded several memory-resident applications, you cannot unload PC Tools Desktop until you have unloaded any programs that were loaded after it.*

Using the Menu Window by Itself

When you use PC Tools Desktop only to run applications and do not need to access its other features, you can use the Menu Window by itself. When you do this, only the Menu Window, title bar, message bar, and DOS command line (if it is turned on) appear. You can then call PC Tools Desktop with a single keystroke when you want to use its other features.

Opening the Menu Window from PC Tools Desktop

- From within PC Tools Desktop, press F10 or click **Menu** on the message bar.



Opening the Menu Window from the DOS Command Line

- From DOS, type

  PCMENU Enter

  The Menu Window appears.

Turning the Menu Window On or Off

Toggle the Menu Window on when you want to start an application or revise an entry, then toggle it off when you need to make room for other information.

- If you are using the Menu Window by itself, press F10 or click **Desktop** on the message bar.

  or

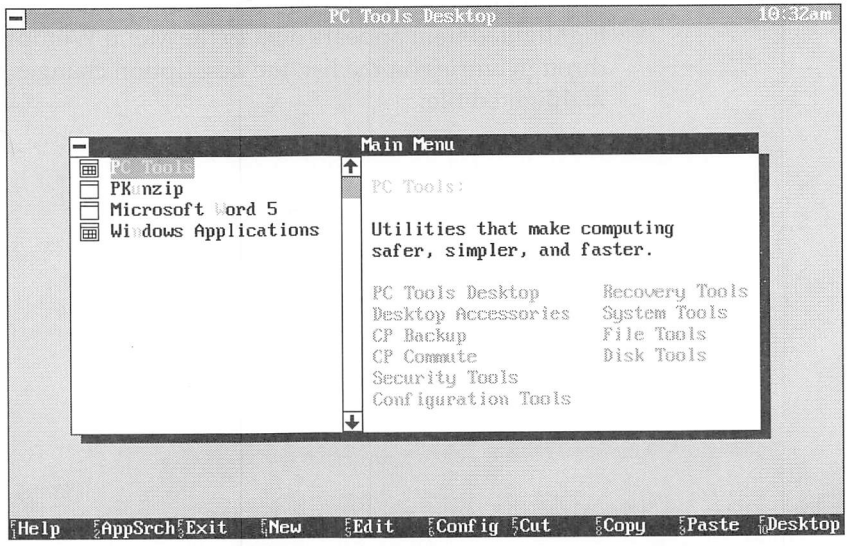
  If you are in the main PC Tools Desktop window and want to see the Menu Window and the Tree and File Lists simultaneously, choose **Menu Window** from the Windows menu.

While the Menu Window is active, the File pull-down menu displays commands for setting up and using the Menu Window.

Each time you toggle the Menu Window on during a session, it "remembers" the group that was displayed the last time you toggled it off. For example, if you are working in the PC Tools group when you have to turn off the Menu Window to work on a report, the PC Tools group is still displayed as the current group when you turn the Menu Window on again.

Describing Menu Window Entries

When you add a group or application item to the Menu Window, you enter any information you want to associate with that entry in a description file. You can then display this file whenever you are in Menu Window only mode.



Entering or Editing a Description

Use any of these steps to display a file where you can enter or edit the description of an entry on the Menu Window.

- When you are adding a group, choose **Description** in the Program Group Information dialog box.

  or

  When adding an application item, choose **Description** in the first Program Item Information dialog box.

  or

  Highlight the entry you want to describe, choose **Properties** in the File menu, then choose **Description** in the dialog box that appears.

Editing commands are described in "Using the PC Tools Desktop File Editor" in the *Using Editors* chapter in this part. When you finish entering information, press Esc to save and exit from this file.

Viewing a Description

NOTE *To view the description for Menu Window items, you must be using the Menu Window by itself.*

1. Make the Menu Window active and press F6.

   The Menu Configuration Options dialog box appears.

2. Select **Display item information panels** and choose **OK**.

   When you are using the Menu Window by itself, the description for the highlighted item appears next to the Menu Window. As you scroll through entries on the list, the description changes to reflect the new highlighted file.

Configuring PC Tools Desktop

Before using PC Tools Desktop, you might want to customize some of its features to fit your own requirements. As you become more familiar with PC Tools Desktop or your needs change, you can define some of the features in a different way.

Here's what you'll find in this chapter:

- **Configuring the Tree and File Lists Display** explains how you can configure features that appear in the Tree and File List display windows.
- **Customizing PC Tools Desktop Menus** explains how to load one of several menu configurations provided with PC Tools or create your own customized menu system.
- **DOS Command Line** explains how you display the DOS command line and work with it.
- **Hiding the Background Mat** explains how you turn the background mat on and off.
- **Hiding Windows** explains the various ways you can hide windows in PC Tools Desktop so you can see the underlying display.
- **Choosing Commands with Windows Hidden** explains how you work with commands when PC Tools Desktop windows are hidden.
- **Changing Display Options** explains how you can change many of the elements you see in PC Tools Desktop, such as colors, lines of text, screen blankers, whether file and directory names appear in uppercase or lowercase, whether you can use Speed Search, and so on.
- **Configuring Default Directory Options** explains how you can set the startup directory, control when the directory tree list is updated, and control the destination of files copied to a drive using drag and drop.
- **Configuring Data-Protection Options** explains how to configure options in the Data Monitor program for tracking deleted files, preventing files from being accidentally deleted, and locking directories to prevent unauthorized access.
- **Configuring Execution Options** explains how to configure modem information for using the Autodialer, how to set a password to prevent unauthorized use of selected PC Tools programs, and how to configure how PC Tools Desktop operates when you run another program.

- **Turning Confirmation Messages On or Off** explains the various confirmation options you can set.
- **Defining Function Keys** explains how you can assign different commands to function keys on the function key line.
- **Configuring Startup Programs** explains how to access the PC Config program to configure which PC Tools programs are installed automatically when you start your computer.
- **Configuring Speed Options** explains how you can move quickly to a file, using Speed Search, and set keyboard and mouse-speed options.
- **Configuring Default Editors** explains how to configure the default file and disk editors. For the default file editor, you can choose the PC Tools Desktop internal file editor, the Desktop Accessories Notepads program, or any external file editor. As the default disk editor, you can choose the PC Tools Desktop internal disk editor, the PC Tools DiskEdit program, or any external disk editor.
- **Configuring PC Secure Options** explains how to configure the default settings used to encrypt and decrypt files.
- **Configuring Drive Mapping** explains how to access the DriveMap program to map logical drive or port identifiers to remote drives or printers.
- **Password Protection** explains how you use a password to protect access to your version of the program.
- **Saving Your Configuration** explains how you save all changes you make to the configuration of PC Tools Desktop.

Configuring the Tree and File Lists Display

PC Tools Desktop's Tree List shows the contents of the current directory, and the File List shows the contents of the directory selected in the Tree List. You can toggle each of these windows on and off. You can also resize them and reposition them on the screen.

You can configure PC Tools Desktop to display a second Tree and File List so that you can view the contents of two drives or directories simultaneously. The two-list display is helpful when copying, moving, or comparing files between drives or directories.

See the *Managing Files* chapter in this part for information on changing file-display options and selecting files. See the *Managing Directories* chapter in this part for information on configuring the Tree List.

Selecting a Single- or Dual-List Display

The following table shows how to open a preset window configuration rather than individual windows:

Choose This Command	Or Press This Key	To View
Single tree and list	Del	One Tree and File List
Dual-list display	Ins	Two Tree and File Lists

Turning Windows On or Off

Commands for turning the windows on or off are listed on the Windows menu. To turn the File List on or off:

- Choose **File Window** on the Windows menu.

  or

- Click the close box to close an open window.

Repeat these steps using the appropriate commands for the File List, Tree List, Menu Window, and View Window if necessary.

Accessing the Menu Window

You can turn on the Menu Window and view it along with the File and Tree Lists, or you can choose to display the Menu Window by itself.

- Choose **Menu Window** from the Windows menu.

  The Menu Window appears as another item in the main PC Tools Desktop window. If the File and Tree Lists are open, they remain open.

Customizing PC Tools Desktop Menus

PC Tools Desktop allows you to customize the pull-down menus. You can use one of the pre-configured menus provided with your PC Tools package, or create your own structure.

Loading a Pre-Configured Menu

Your PC Tools package contains four pre-configured PC Tools Desktop menu structures:

- **LONG.MNC:** The default menu configuration for PC Tools Desktop version 8.0. These menus are used automatically when you first run PC Tools Desktop. All procedures in this manual refer to this menu structure.
- **SHORT.MNC:** Contains a shortened version of the PC Tools Desktop version 8.0 menus. This menu structure does not contain items for accessing advanced programs, such as FileFix.
- **VERSION7.MNC:** Contains a menu structure similar to that used in PC Shell version 7.1.
- **VERSION6.MNC:** Contains a menu structure similar to that used in PC Shell version 6.0.

You can switch to any of these menu structures, or to one you create yourself, by using the **Load Pull-Downs** command. For information on creating your own menu structures, see "Creating Customized Menus" later in this chapter.

Loading a Menu from within PC Tools Desktop

1. Choose **Load Pull-Downs** from the Configure menu.

   The Use a New Menu File dialog box appears, showing a list of the available menu files. All menu files have a .MNC extension.

   ▶ To search for additional menu files, choose **Browse**.

2. Select the menu file you want to use and choose **OK**.

   The main PC Tools Desktop window reappears, showing the selected menu file structure.

   or

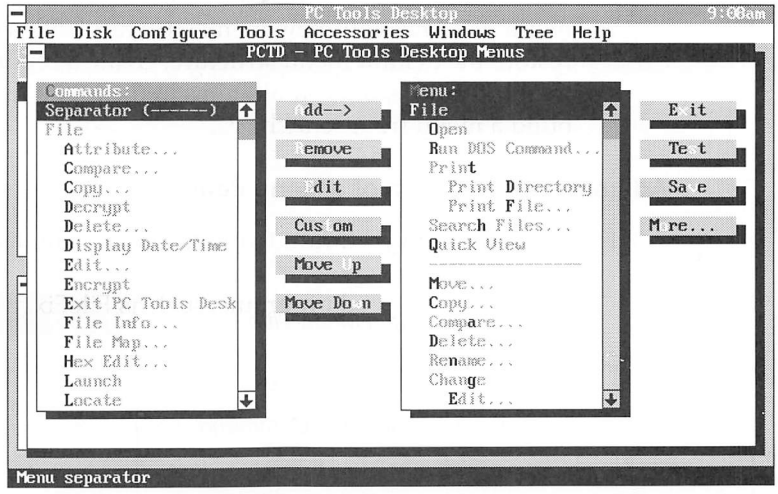
   Choose **Edit** to edit the selected menu file.

   See "Creating Customized Menus" following for information on using the Menu Editor.

Creating Customized Menus

From within PC Tools Desktop, you can create customized menus that suit your individual needs.

1. Load the menu you want to edit.
2. Choose **Edit Pull-Downs** from the Configure menu.



The Commands list box displays a list of all available PC Tools Desktop commands. The Menu list box displays the menu structure currently in use. You can use the buttons to customize the menu structure shown in the Menu list box. How to use each button is explained in more detail later in this chapter.

Add: Adds the item selected in the Commands list box to the menu structure just below the highlighted item in the Menu list box.

Remove: Removes the item selected in the Menu list box from the menu structure.

Edit: Lets you change the name, hotkey, and bottom-line help of the selected item in the Menu list.

Custom: Lets you create your own menu item.

Move Up: Moves the selected item in the Menu list box up one position in the list. If the selected item is a submenu title with associated commands, the submenu commands move also.

Move Down: Moves the selected item in the Menu list box down one position in the list. If the selected item is a submenu title with associated commands, the submenu commands move also.

Exit: Exits from the Menu Editor and displays the main PC Tools Desktop window.

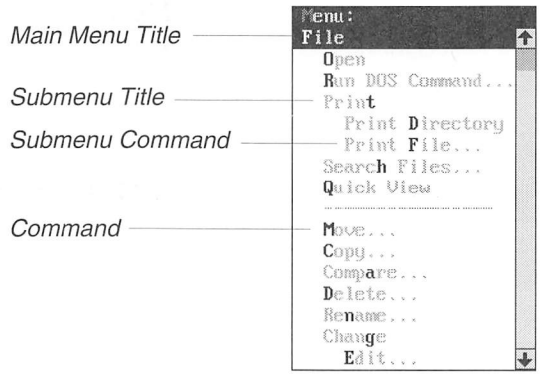
Test: Lets you look at the new menu structure you've created.

Save: Saves the new menu structure you've created. The current menu file is overwritten with the changes you've made.

More: Opens an options dialog box, allowing you to use additional Menu Editor features. From the options dialog box, you can load a different menu file, save your new menu structure with a different file name, restore the default menu structure, create a report file showing the current menu structure, or clear all items in the Menu list box so that you can build a menu from scratch.

Adjusting the Position of a Menu Item

1. Select the item you want to move in the Menu list box.



The position of each item in the Menu list box indicates its hierarchy in the menu structure.

Main Menu Title: Items at the far left of the list box indicate a main menu title. These appear as they do in the PC Tools Desktop menu bar.

NOTE *Two main menu entries for the File menu are listed. The File main menu, contains items present in the File menu when the Tree or File lists are selected in PC Tools Desktop. The File main menu contains items present in the File menu when the Menu Window is selected.*

Submenu Title: Items indented one level under a main menu title that also have other items indented beneath them. Submenu titles contain logical groupings of commands, such as several different Print commands, as shown in the example.

Submenu Command: Items indented beneath a submenu title that execute associated commands.

Command: Items indented one level under a main menu title that execute associated commands.

2. Select **Move Up** or **Move Down** to change the position of the selected item.

   As you move the item, it may change from a submenu command to a command position or from a submenu title to a main menu title. If the selected item is a submenu title, all its associated submenu commands move with it.

NOTE *Any item can be moved up or down in the menu structure. However, commands cannot be moved to main menu titles.*

Adding a Command to the Menu

1. Select a command in the Commands list box.
2. Select the location in the Menu list box just *above* where you want the new command to appear and choose **Add**.

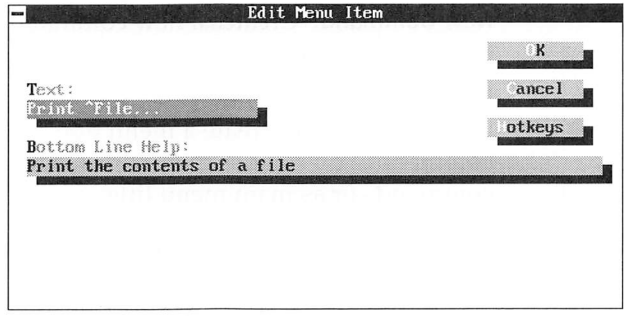
   The new command is added one level below the location you selected in the Menu list box.

Removing a Command from the Menu

- Select the command you want to remove in the Menu list box and choose **Remove**.

Editing a Command

1. Select the command you want to edit in the Menu list box and choose **Edit**.



2. Type the name you want to use for the command in the Text box.

   You can specify which letter to use as the command's hotkey by typing a caret (^) in front of the letter. In the previous example, F is the hotkey.

   You can see what keys are available for use as hotkeys by choosing **Hotkeys**.

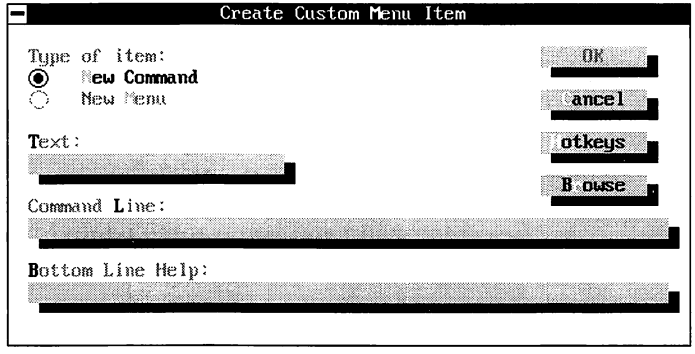
3. Type the message you want for bottom-line help in the Bottom Line Help text box.

4. Choose **OK**.

   The edited command name appears in the Menu list box.

Creating a Custom Menu Item

1. Select the command in the Menu list box just above the location where you want a new item added and choose **Custom**.



2. Select the type of item you want to create.

   New Command: Creates a new command in the Menu list. Select this option when you want to associate a command with a menu item.

   New Menu: Creates a new menu title in the Menu list. Select this option when you want to create a menu title that is not associated with a DOS command. You can use menu titles to contain groups of submenu commands or as main menu titles.

3. Type the name you want to use for the command or title in the Text box.

   You can specify which letter to use as the command's hotkey by typing a caret (^) in front of the letter. To see what keys are available for use as hotkeys, choose **Hotkeys**.

4. If you are creating a new command, type the DOS command you want to associate with it in the Command Line text box.

   If you are creating a new menu title, skip this step.

   Type the command just as you would if you were running the program from a DOS prompt. For example, to create an item to edit your AUTOEXEC.BAT file automatically, enter `EDIT C:\AUTOEXEC.BAT` in the Command Line text box.

   - To view available executable files and choose the one you want to use, choose **Browse**.

5. Type the message you want for bottom line help in the Bottom Line Help box.

6. Choose **OK**.

   The new menu item or command appears in the Menu list box.

Testing the New Menu Structure

- Choose **Test**.

  A sample PC Tools Desktop window appears, showing the new menu structure you've created. You can open any of the menus to see the commands and submenus they contain.

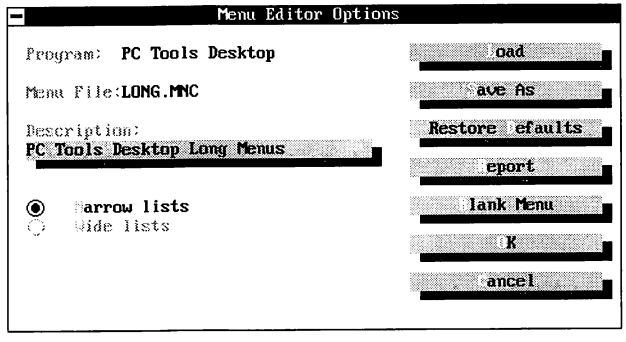
  In the lower-right corner of the screen, a dialog box contains two buttons:

  Alternate Menu Scheme: Switches between the File menu used when the Tree List or File List is active in the main PC Tools Desktop, and the File menu used when the Menu Window is active.

  Return to Editor: Exits from the test display and displays the Menu Editor.

Changing the Menu File's Description and Display

1. Choose **More** from the main Menu Editor window.



Program: Indicates the program the menus are designed for. In this case, PC Tools Desktop.

Menu File: Indicates the menu file currently in use. In this case, LONG.MNC.

2. Type the description you want in the Description text box.

   This description appears in the title bar of the Menu Editor dialog box and in the list of menus available when you load a new menu structure.

3. Choose how you want the menus displayed in the Menu Editor dialog box.

   Narrow Lists: Displays the available commands and current menu structure in narrow lists. This is the default display.

   Wide Lists: Displays the available commands and current menu structure in wide lists.

4. Choose **OK**.

Loading a Different Menu File

1. Choose **More** from the main Menu Editor window.
2. Choose **Load**.
3. Select the menu file you want to use and choose **Load**.

   The new menu file is loaded and you can use all the functions of the Menu Editor to customize its structure.

Clearing the Menu Structure

You can clear the current menu structure and build a menu from scratch.

1. Choose **More** from the main Menu Editor window.
2. Choose **Blank Menu**.
3. Choose **OK**.

   The menu structure of the current menu file is cleared, leaving a blank slate for you to build your own structure.

Restoring the Default Menu Structure

You can restore the original, default menu structure at any time, even if you've altered the LONG.MNC file.

1. Choose **More** from the main Menu Editor window.
2. Choose **Restore Defaults**.

   The default menu structure, saved in the LONG.MNC file, is restored.

Saving Your Changes

You can save the changes you make to the menu file by overwriting the menu file you modified, or by saving the new menu file with a different name.

Overwriting the Modified Menu File

- Choose **Save**.

  The structure of the menu file you modified is replaced with the new one you've created.

Saving the New Menu File with a Different Name

1. Choose **More** from the main Menu Editor window.
2. Choose **Save As**.
3. Enter the path and file name where you want to store the new menu file and choose **OK**.

   To navigate to the location where you want to store the file, choose **Browse**.

   The new menu file is saved with the name and in the location you specify. The menu file you modified remains unchanged.

TIP *Use the extension .MNC when naming your menu file and store it in the PCTOOLS\DATA directory. When you load a new menu file, the program looks for files in the PCTOOLS\DATA directory that have an .MNC extension.*

Creating a Report of the Menu Settings

You can create a file containing a report of the current menu structure. This is useful if you want to have a text copy for distribution to others who will use the structure.

1. Choose **More** from the main Menu Editor window.
2. Choose **Report**.

3. Select the type of report you want to create.

   Short: Creates a report file containing only the menu structure. Bottom-line help messages are not included.

   Long: Creates a report file containing both the menu structure and the bottom-line help messages for each item.

4. Type the path and file name where you want to store the report in the Filename text box.

5. Choose **OK**.

Exiting the Menu Editor

▶ Choose **Exit** in the main Menu Editor window.

If you made changes to the menu structure and did not save them, a dialog box appears, giving you the opportunity to save or discard the changes.

If you loaded a different menu file from within the Menu Editor, a dialog box appears, asking if you want this new menu file used for the PC Tools Desktop default menus.

DOS Command Line

The DOS command line gives you access to a DOS prompt inside PC Tools Desktop if you turn it on. When the command line is on, you can enter DOS commands to be run. This gives you DOS functionality from within the PC Tools Desktop, whether PC Tools Desktop is resident or not.

For example, you might use the DOS command line to run your word processor. You can just type the file name, instead of taking the time to locate and launch the file by another method. Or, you can hide PC Tools Desktop's windows, enter commands on the DOS command line, and see the results on your screen, as shown on the next page.

See the *Running Applications from PC Tools Desktop* chapter in this part for information on running programs from the DOS command line.

Toggling the DOS Command Line On or Off

▶ Choose **DOS Command Line** from the Windows menu.

The DOS command line appears above the message bar at the bottom of the screen. Press Tab to activate the DOS command line. Whatever you type, unless your speed search is on, appears on the command line.

Entering Commands on the DOS Command Line

The DOS command line must be on to use this procedure.

1. Activate the DOS command line in one of these ways:

   - Press Tab. (You might have to press Tab several times before the command line becomes active.)

     or

   - Click the DOS command line.

2. Type the characters you want to enter on the DOS command line, then press Enter.

Recalling Past Commands

PC Tools Desktop saves the last 16 DOS commands you entered from the DOS command line in special memory. This gives you the ability to go back to the command line and recall the commands without retyping them. If you imagine the commands in a list, pressing Ctrl ← moves back through the list of commands and Ctrl → moves forward.

Hiding the Background Mat

The background mat is a pattern that hides the underlying screen. You might want to turn off the background mat if you use the DOS command line frequently, or work with hidden windows. Turning off the background mat before you hotkey into PC Tools Desktop from any application lets you see what is displayed on the underlying application screen.

- Choose **Background Mat** from the Windows menu.

Hiding Windows

When you hide PC Tools Desktop's windows, you can use the PC Tools Desktop commands you need most often, and still have access to all DOS functionality or the information displayed by an underlying program.

1. Turn off the **Background Mat** option in the Windows menu.
2. Turn on the **DOS Command Line** option in the Windows menu.
3. Choose **Hide All Windows** from the Windows menu.

   The underlying program or DOS screen appears. The only indications that PC Tools Desktop is running are the message bar at the bottom of your screen and the DOS command line, if it is turned on.

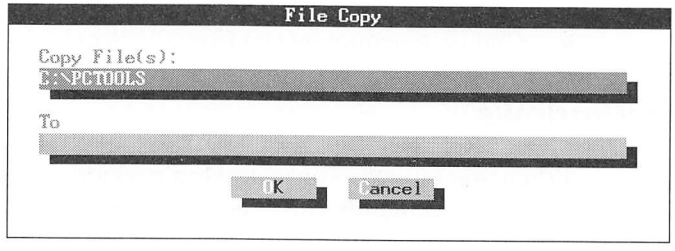
- To use the pull-down menus while windows are hidden, press and hold Alt.

```
PC-CACHE COM      23679 05-18-91   6:26a
PCRUN    COM       3020 07-25-90   6:04p
PCSHELL  EXE     122162 05-23-91  12:29a
PCTOOLS  BAT         51 05-21-91  10:50a
README   TXT       6744 05-19-91  12:15p
VIEW     EXE      31470 05-19-91  10:30a
DESKTOP  EXE     103401 05-23-91   5:05a
BACKTALK EXE       1265 05-08-91   5:19p
ITLFAX   EXE      10729 05-13-91   1:17p
CPSCHED  EXE      22006 05-23-91   6:45a
KILL     EXE       2016 05-20-91   1:18a
COMMUTE  EXE     240969 05-21-91   2:05p
WNBACKUP EXE     437040 05-19-91   1:16p
WNLAUNCH EXE      25360 05-18-91   4:29p
WNSCHEDL EXE      72000 05-18-91  12:04p
WNTSRMAN EXE      15584 05-13-91   5:50p
WNUNDEL  EXE     126816 05-13-91   4:25p
INBOX          <DIR>     05-30-91   8:30a
OUTBOX         <DIR>     05-30-91   8:30a
SENT           <DIR>     05-30-91   8:30a
       49 File(s)   12335104 bytes free


C:\PCTOOLS>
1Help  2Qview  3Exit  4Unsel  5Copy  6Disply 7Locate 8Zoom  9Select 10Menu
```

Choosing Commands with Windows Hidden

Commands from the File menu work differently when windows are hidden. Choosing a File menu command in this mode brings up a dialog box requesting the necessary information. For example, choosing Copy from the File menu displays the following dialog box:



In this example, type the path and name of the file you want to copy and the path and name for the file's destination. Then choose **OK**.

Changing Display Options

You can change the way certain features appear on your screen, such as the colors, date and time, how many lines of characters appear on your screen, and so on.

- Choose **Display Options** from the Configure menu and select the option you want to change.

  Colors: Lets you change the colors that are displayed in the different parts of the screen. For example, you can change the color of dialog boxes and the text displayed in them.

  Because these options are set using PC Config, the selections you make apply to all PC Tools programs. See the *PC Config* chapter in *Part 1 Getting Started* in this volume for more information.

  Screen Size: Lets you choose the number of lines displayed on the screen. Because these options are set using PC Config, the selections you make apply to all PC Tools programs. See the *PC Config* chapter in *Part 1 Getting Started* in this volume for more information.

  Screen Blanker: Configures the Screen Blanker portion of PC Tools Data Monitor. This memory-resident program prevents your monitor from premature wear by displaying a pattern or message after your computer is idle for a specified amount of time. See the *Data Monitor* chapter in *Part 3 Data Recovery and System Utilities* in this volume for information on using Screen Blanker.

  Disk Light: Configures the Disk Light portion of PC Tools Data Monitor. This memory-resident program shows you when your hard disk or network drive is being accessed by displaying a light in the corner of your screen. See the *Data Monitor* chapter in *Part 3 Data Recovery and System Utilities* in this volume for information on using Disk Light.

  List Filter: Lets you choose the type of files to display in the File List, based on file names or extensions. See "Selecting Files" in the *Managing Files* chapter in this part for more information.

  Select Filter: Lets you select a group of files from the active directory that have common file names, extensions, or characters. See "Selecting Files" in the *Managing Files* chapter in this part for more information.

  Upper Case: Displays directory and file names in all capital letters when selected.

  File Display Options: Lets you choose how to display and sort the files in the File List.

Split Horizontal: Switches windows on the screen between horizontal and vertical display. The active window runs across the screen — or horizontally — if you turn on the option. The active window runs up and down the screen — or vertically — if you turn off the option.

Placing a window so it appears horizontally is ideally suited for those times when you open a view window and you want to scroll through a list of file names and view their contents. This lets you view file names as you normally do in the File List, and view file contents while you can keep your eye on which file name you are viewing.

Tiled Windows: Divides the entire PC Tools Desktop screen between all open windows and displays them side by side. You can enlarge tiled windows to full-screen size by selecting the Zoom command in the Windows menu or by clicking the zoom box in the upper-right corner of the window. However, you cannot resize or move tiled windows independently.

Configuring Default Directory Options

PC Tools Desktop gives you several options for configuring default directories.

- Choose **Tree** from the Configure menu and select the options you want.

  Startup First Level: When this option is selected, the next time you start PC Tools Desktop, the Tree List displays the root directory plus one level of subdirectories.

  Local Tree: When this option is selected and you change drives, then return to the original drive, PC Tools Desktop does not reread the drive and build a new Tree List. Instead, the Tree List constructed when you first accessed the drive appears. Turning on this option can save you time when switching between drives with large numbers of directories.

  If you exited from PC Tools Desktop and added or deleted directories, the new directory structure is not shown when you return. To update the Tree List with the new directory structure, choose **Re-Read Tree** from the Disk menu. The tree is automatically re-read every five days.

  Return to Startup Dir: When this option is selected and you exit from PC Tools Desktop, the default directory is the same as it was when you first started PC Tools Desktop. For example, if you started PC Tools Desktop from the C:\PCTOOLS directory, and select this option, when you exit from PC Tools Desktop, the current directory is still C:\PCTOOLS. This is true even if you change directories while using PC Tools Desktop.

While using PC Tools Desktop, you can tell which directory is the current default directory by the greater than sign (>) displayed next to the directory name in the Tree List.

Reset Current Directory: Use this option in conjunction with the Return to Startup Dir option to change the default directory to the directory selected in the Tree List. After selecting this option, the greater than sign (>) appears next to the new default directory.

Drop on Drive Copies to Root: When this option is selected, a file dragged and dropped to a drive icon is copied to the root directory of that drive (for example, C:\). When this option is off, a file dragged and dropped to a drive icon is copied to the current directory on that drive.

Configuring Data-Protection Options

- Choose **Data Protection** from the Configure menu and select the option you want to configure. Each Data Protection option is part of the Data Monitor program. See the *Data Monitor* chapter in *Part 3 Data Recovery and System Utilities* in this volume for more information.

  Delete Protection: Lets you select the method you want to use for monitoring deleted files. This is part of the Data Monitor program.

  Write Protection: Lets you configure the Write Protection options that are part of the Data Monitor program. Write protection prevents crucial data, program, and system files from being deleted, overwritten, or damaged.

  Directory Locking: Lets you configure the Directory Lock options that are part of the Data Monitor program. Directory Lock encrypts files as they are opened from a specified directory so that they cannot be changed or read by anyone who does not know the password you assign.

Configuring Execution Options

- Choose **Execution** from the Configure menu and select the option you want to configure.

  Autodialer: Lets you specify your modem port and special dialing codes used when automatically dialing a telephone number displayed on the screen. The Autodialer is used in conjunction with the Desktop Accessories Databases program. Desktop Accessories must be installed memory-resident to use the Autodialer. It can also be used to dial any phone number on your screen when Desktop Accessories is installed as a memory-resident program. See *Part 4 Desktop Accessories* in Volume 2 for more information.

Execution passwords: Lets you set a password to prevent unauthorized execution of Central Point Anti-Virus, Compress, DiskEdit, DiskFix, PC Format, and Undelete. You can also use this password to prevent unauthorized changes to the configuration of PC Tools startup programs.

Quick Run: When this option is on, PC Tools Desktop remains in memory while other programs are accessed. See "Using the Quick Run Command" in the *Running Applications from PC Tools Desktop* chapter in this part for more information on this option.

Wait on DOS: When this option is on, PC Tools Desktop pauses after running a DOS application or command. A message tells you to press any key to return to PC Tools Desktop.

Turning Confirmation Messages On and Off

You can choose whether to display a confirmation message when you perform operations.

1. Choose **Confirmation** from the Configure menu.
2. In the Confirmation Options dialog box, select the options you want to use.

   Confirm on Delete: When selected, asks for confirmation when you delete files and directories.

   Confirm on Replace: When selected, asks for confirmation when you replace files and directories.

   Confirm on Mouse Operations: When selected, asks for confirmation when you use a mouse to perform operations like copying or moving.

   Confirm on System Files: When selected, asks for confirmation when you work with system files.

   Don't Delete System Files: When selected, asks for confirmation when you delete system files.

   Use Date/Time/Size in File Copy: When selected, PC Tools Desktop warns you of a duplicate file when you copy one file over another whose name, date, time, and size attributes are all identical. When this option is not selected, PC Tools Desktop warns you of a duplicate file when you copy one file over another whose name is identical, even if the date, time, and size attributes are different.

   Hides System Files: When selected, hides system files to prevent you from accidentally deleting or changing them.
3. Choose **OK**.

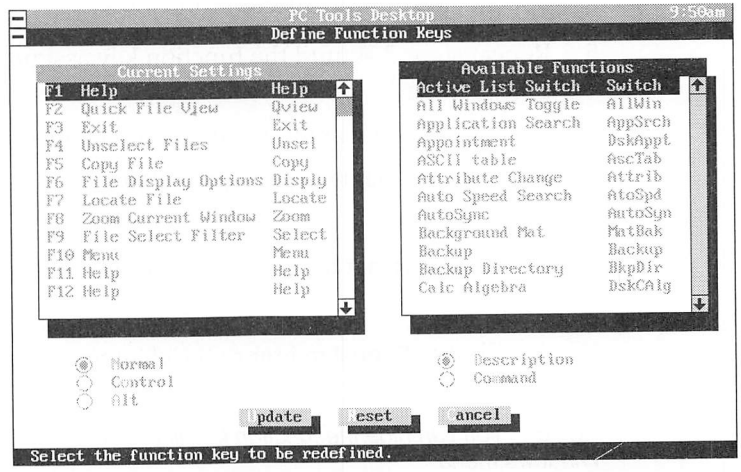
Defining Function Keys

You can configure the function keys listed on the bottom line of PC Tools Desktop's main screen to perform the commands you use most often. You can see the default configuration that appears when a Tree or File List is active in the dialog box below.

NOTE *F1 and F3 are system keys that you cannot change. You may redefine the other keys. The F11 and F12 keys can be redefined and used, however, they do not appear on the screen.*

As you use PC Tools Desktop to perform different functions, the function keys on the message bar change. For example, when the View window or Menu Window is active, different functions are listed on the message bar. You *cannot* redefine the function keys for these special situations.

1. Choose **Define Function keys** from the Configure menu.



2. Select the group of function keys you want to work with:

   Normal: Displays the function keys available on the main PC Tools Desktop screen.

   Control: Displays the function keys available on the main PC Tools Desktop screen when you press Ctrl.

   Alt: Displays the function keys available on the main PC Tools Desktop screen when you press Alt.

3. Select the function key you want to change from the Current Settings list box or press the function key you want to change.

   As soon as you select a function key, the Available Functions list box becomes active. (To move back and forth, press Tab.)

4. Select the command you want to assign from the list in the Available Functions list box and press Enter.

   or

   Click the command you want to assign from the list in the Available Functions list box.

   - Choose **Description** to sort the functions alphabetically by their description.

     or

     Choose **Command** to sort the functions alphabetically by the command name.

   Commands from the PC Tools Desktop pull-down menus are listed along with the name that will be displayed on the message bar.

   The Current Settings list box becomes active again. The new command appears next to the selected function key.

5. Repeat steps 3–4 until the function key assignments you want are configured.

6. Select how you want to handle your changes:

   - Choose **Update** to save your changes.

     or

     Choose **Reset** to restore the settings to the default function keys.

     or

     Choose **Cancel** to ignore the changes and continue defining function keys.

NOTE *You can hide the function key line, using the Function key command on the Windows menu.*

Configuring Startup Programs

From within PC Tools Desktop, you can choose which PC Tools programs are installed automatically when you restart your computer.

- Choose **Startup Programs** from the Configure menu.

  The Configure Startup Programs window from the PC Config program appears, allowing you to select the PC Tools programs you want automatically installed when you restart your computer.

  See the *Configuring PC Tools Startup Programs* chapter in *Part 1 Getting Started* in this volume for more information on using the Configure Startup Programs window.

Configuring Speed Options

- Choose **Speed** from the Configure menu and select the option you want to configure.

  Speed Search: Lets you quickly move to a directory or file listed in the active Tree or File List. See "Selecting Files with Speed Search" in the *Managing Files* chapter in this part for more information.

  Keyboard Speed: Lets you configure keyboard options. Because these options are set using PC Config, the selections you make apply to all PC Tools programs. See the *PC Config* chapter in *Part 1 Getting Started* in this volume for more information.

  Mouse Speed: Lets you configure mouse options. Because these options are set using PC Config, the selections you make apply to all PC Tools programs. See the *PC Config* chapter in *Part 1 Getting Started* in this volume for more information.

NOTE *When you change the mouse speed, you must exit from PC Tools Desktop, then start the program again for the changes to take effect.*

Configuring Default Editors

You can configure the default text and disk editors used by PC Tools Desktop when you choose **Change ➤ Edit** from the File menu or when you choose **Disk Editor** from the Disk menu.

Choosing a Default File Editor

1. Choose **Configure Editors ➤ File Editor** from the Configure menu.
2. Select the editor you want to use and choose **OK**.

   Internal Editor: Uses the internal PC Tools Desktop text editor.

   Desktop Accessories Notepads: Uses the Notepads editor in the Desktop Accessories. See the *Notepads* chapter in *Part 4 Desktop Accessories* in Volume 2 for more information.

   External Editor: Uses the external editor of your choice. Enter the application's file name in the text box. For example, EDITOR.EXE. When you use this option, you must include the keywords <path> or <filename> to allow the file name to be passed to the editor program. See "Program Item Information" in the *Managing Applications* chapter in this part for more information on using keywords.

   The text editor you choose is accessed whenever you choose **Change ➤ Edit** from the File menu.

Choosing a Default Disk Editor

1. Choose **Configure Editors ➤ Disk Editor** from the Configure menu.
2. Select the editor you want to use and choose **OK**.

   Internal Editor: Uses the internal PC Tools Desktop text editor.

   DiskEdit Program: Uses the PC Tools DiskEdit program. See the *DiskEdit* chapter in *Part 3 Data Recovery and System Utilities* in this volume for more information.

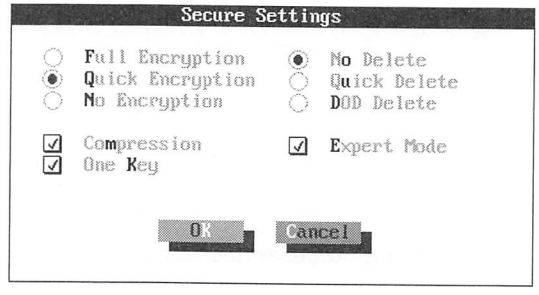
   External Editor: Uses the external editor of your choice. Enter the application's file name in the text box. For example, EDITOR.EXE.

   The disk editor you choose is accessed whenever you choose **Disk Editor** from the Disk menu.

Configuring PC Secure Options

Before using PC Secure to encrypt a file or directory, you can customize your PC Secure session by selecting the options you want. The default settings for the application are Quick Encryption, Compression, One Key, and No Delete.

1. Choose **Secure Options** from the Configure menu.
2. Select the options you want in the Secure Settings dialog box.



Full Encryption: Performs full encryption on the selected file, using the complete Data Encryption Standard (DES) algorithm. This is the most secure type of encryption.

NOTE *The Full Encryption option is only available in PC Tools packages sold in the United States. International versions of the product do not include this option.*

Quick Encryption: Performs an abbreviated encryption on the selected file. This runs twice as fast as full encryption, but is somewhat less secure.

No Encryption: Performs no encryption on the file.

Compression: Compresses the file. If you have also selected an encryption option, PC Secure can compress the file as it encrypts it, with no perceptible loss of speed.

One Key: Allows you to use one password (key) for many files (default). PC Secure will only prompt for a key the first time you encrypt or decrypt a file in a given session. It continues to use the same key for the duration of the session (unless a file you are decrypting has a different key than the first key, in which case it will prompt for that key).

No Delete: Leaves the original file on your disk, along with the encrypted file. The encrypted file has the same name, except for the .SEC extension.

Quick Delete: Deletes the original file after encryption.

DOD Delete: Clears the original file, in accordance with Department of Defense (DOD) standards. See the *Wipe* chapter in *Part 3 Data Recovery and System Utilities* in this volume for details.

Expert Mode: When this is turned on before you encrypt a file, the file can be decrypted only with the file key used at the time of encryption. When Expert Mode is off, the file can be decrypted with either the master key or the file key.

WARNING When you use the Expert Mode option, take extra steps to keep track of the keys you assign to files. Without its assigned key, you can never decrypt the file.

3. Choose **OK**.

Configuring Drive Mapping

▶ Choose **Drive Mapping** from the Configure menu.

The DriveMap application opens. DriveMap is a communication program that allows you to use your PC or laptop to copy, edit, or execute files on other PCs' hard drives or network drives. You can also use DriveMap to send your output to other PCs' parallel printers. DriveMap enables PCs and laptops that are not on a network to gain access to network drives. PCs using DriveMap connect to one another by LAN (Local Area Network) or by direct cable connection.

For more information, see the *DriveMap* chapter in *Part 3 Data Recovery and System Utilities* in this volume.

Password Protection

You can protect the configuration of PC Tools Desktop with a password, either for your own personal copy or for a copy you are configuring for others. Once you have specified a password, you can change it from within PC Tools Desktop, as long as you know the old password.

The password you set protects anyone from modifying the following items in the Configure menu: Load Pull-downs, Edit Pull-downs, Confirmation, Define Function Keys, and Configure Editors.

NOTE *You can also set an execution password to protect unauthorized access to some of the PC Tools programs such as DiskFix. See "Configuring Execution Options" earlier in this chapter for more information.*

Creating a Password for the First Time

1. Choose **Password** from the Configure menu.

   The Change Password dialog box appears.

2. Type the characters you want to use for your password in the New text box.

   Your password can be a maximum of 8 characters.

3. Type the password again in the Confirm text box, then choose **OK**.

Changing an Existing Password

1. Choose **Password** from the Configure menu.

   The Change Password dialog box appears.

2. Type the existing password, then choose **OK**.

3. Type the existing password in the Old text box.

4. Type the characters you want to use for your new password in the New text box.

5. Type new password again in the Confirm text box, then choose **OK**.

   If the old password you typed is correct, the change is made. Otherwise, a message tells you to try again, and the password is not changed.

Deleting a Password

1. Choose **Password** from the Configure menu.
   The Change Password dialog box appears.
2. Type the existing password, then select **OK**.
3. Type the existing password in the Old text box.
4. Choose **OK**.
   Leaving the New and Confirm text boxes empty deletes the password.

Saving Your Configuration

The Save Configuration command saves all your configuration settings so they remain in effect the next time you use PC Tools Desktop. For example, you might add items to the Menu Window, open a View window, change the viewer configuration, or change the current drive. Then use this command to make sure PC Tools Desktop "remembers" these changes for future sessions.

- Choose **Save Configuration** from the Configure menu.
  Your options are saved in the PCTOOLS.CFG file.

If you try to exit from PC Tools Desktop without saving your new configuration settings, you have another opportunity to save them. Whenever you make a change to the configuration settings, PC Tools Desktop checks the Save Configuration option in the Close PC Tools Desktop dialog box for you. To exit from the program without saving the configuration changes you made, turn off the Save Configuration option before choosing **OK** to exit from the program.

Running Applications from PC Tools Desktop

PC Tools Desktop allows you to run any DOS application, without exiting to DOS. The more popular PC Tools applications are easy to access from the menus. You can also install your own favorite applications.

Here's what you'll find in this chapter:

- **Using Tools** explains how you access PC Tools applications installed on the Tools menu.
- **Using Accessories** explains how you access Desktop Accessories applications installed on the Accessories menu.
- **Running Applications from the Menu Window** explains how you run a DOS application from the Menu Window.
- **Running Applications from the File List** explains how you run a DOS application from the File List window.
- **Using the Quick Run Command** explains how you run a DOS application using the Quick Run command.
- **Running Applications from a View Window** explains how you run a DOS application from the View window.
- **Running Applications from the DOS Command Line** explains how you run a DOS application from the DOS command line.
- **Running DOS Commands from PC Tools Desktop** explains how to run a single DOS command when the DOS command line is turned off.
- **Pausing After Executing a Command or Application** explains how to tell PC Tools Desktop to pause after running a command or an application, before returning to the main PC Tools Desktop window.

Using Tools

The Tools menu provides easy access to other PC Tools applications. Whenever you run one of these applications from PC Tools Desktop, you return to PC Tools Desktop when you exit from the application.

- Choose the application you want to run from the **Tools** menu.

  Anti-Virus: The Central Point Anti-Virus application detects over 1300 different viruses and cleans your system of infection. For more information, see *Part 1 Central Point Anti-Virus* in Volume 2.

  Central Point Backup: Central Point Backup lets you back up vital hard disk data to floppy disks or tape drives. For more information, see *Part 2 Central Point Backup* in Volume 2.

  Commute: Commute lets your computer communicate with another computer using a modem, a network, or a direct (hardwire) connection. For more information, see *Part 3 Commute* in Volume 2.

  Disk Optimization: Runs the Compress application to defragment your disks. For more information, see the *Compress* chapter in *Part 3 Data Recovery and System Utilities* in this volume.

  Build Emergency Disk: The Build Emergency Disk application lets you create, upgrade, or configure an emergency disk, which can be used to recover damaged disks and can be used to boot your computer when it won't start from the hard disk. For more information, see the *Build Emergency Disk* chapter in *Part 3 Data Recovery and System Utilities* in this volume.

  Undelete: Undelete lets you recover files that have been deleted accidentally. For more information, see the *Undelete* chapter in *Part 3 Data Recovery and System Utilities* in this volume.

  Unformat: Unformat lets you unformat a disk and recover data that was lost during the format. For more information, see the *Unformat* chapter in *Part 3 Data Recovery and System Utilities* in this volume.

  DiskFix: DiskFix checks your disk for errors and optionally repairs those errors. For more information, see the *DiskFix* chapter in *Part 3 Data Recovery and System Utilities* in this volume.

  FileFix: FileFix lets you repair damaged files created by the Lotus, Excel, and Quattro Pro spreadsheet applications, dBASE, Paradox, and R:Base database applications, and the WordPerfect word-processing application. For more information, see the *FileFix* chapter in *Part 3 Data Recovery and System Utilities* in this volume.

System Information: System Information (SI) lets you see detailed information about your computer's hardware and memory configuration, as well as disk and CPU performance. In addition, you can use System Information to view your AUTOEXEC.BAT and CONFIG.SYS files and see information about your Novell network. For more information, see the *System Information* chapter in *Part 3 Data Recovery and System Utilities* in this volume.

Maps: Opens a submenu with the following choices:

File Map: Displays a map of the clusters allocated by selected files, showing the location of the first selected file. If no files are selected, PC Tools Desktop maps all files in the current directory. For more information, see "Mapping Files" in the *Managing Files* chapter in this part.

Disk Map: Displays a map of the selected disk, showing which sectors (or clusters) are used and which are free. For more information, see "Mapping Files" in the *Managing Files* chapter in this part.

Memory Map: Displays the Conventional Memory Information panel from the System Information application, showing the type, location, and size of DOS memory blocks and the applications owning them. For more information, see the *System Information* chapter in *Part 3 Data Recovery and System Utilities* in this volume.

Memory Info: Memory Information (MI) displays a summary of your computer's memory usage. For more information, see the *Memory Information* chapter in *Part 3 Data Recovery and System Utilities* in this volume.

Program Scheduler: Opens the Scheduler application to schedule any program to run automatically. For more information, see the *Central Point Scheduler for DOS* chapter in *Part 3 Data Recovery and System Utilities* in this volume.

Network Message: Lets you send a short message to any user logged in to your Novell NetWare network. For more information, see the *Net Message* chapter in *Part 3 Data Recovery and System Utilities* in this volume.

DOS Session: Lets you temporarily exit from PC Tools Desktop at any time, return to DOS, execute a series of commands, and come back to PC Tools Desktop. To return to PC Tools Desktop, type `EXIT` Enter.

Using Accessories

The Accessories menu provides easy access to Desktop Accessories applications.

- Choose the accessory you want to use from the **Accessories** menu.

  Notepads: Opens a simple word-processing application that allows you to write notes and short reports to yourself or to co-workers. For more information, see the *Notepads* chapter in *Part 4 Desktop Accessories* in Volume 2.

  Outlines: Opens an outlining application that helps you organize your ideas before writing reports and memos. It can also produce a list of the main ideas included in a longer report. For more information, see the *Outlines* chapter in *Part 4 Desktop Accessories* in Volume 2.

  Databases: Opens a database program that uses dBASE-compatible file formats to help you organize and manage information. It provides sorting capabilities and lets you access and update information in a variety of ways. On a network, multiple users can view a database at the same time. A built-in autodialer lets you automatically dial any phone number in the database. For more information, see the *Databases* chapter in *Part 4 Desktop Accessories* in Volume 2.

  Appointment Scheduler: Opens an appointment scheduler program to keep track of your appointments. In addition to an appointment calendar with task lists and alarms to remind you of important events, this application lets you run programs at a specified time. Groups can be created and group appointments set. This is a particularly useful feature in a network environment. For more information, see the *Appointment Scheduler* chapter in *Part 4 Desktop Accessories* in Volume 2.

  Modem Telecommunications: Opens a modem telecommunications program and lets you use your computer to send faxes, order merchandise, or communicate with users around the world with a modem attached to your PC. For more information, see the *Modem Telecommunications* chapter in *Part 4 Desktop Accessories* in Volume 2.

  Electronic Mail: Opens an electronic mail program and lets you access electronic mail on either MCI Mail, CompuServe, or EasyLink without learning complicated data-transmission settings. You must have a mailbox with one of these services to use electronic mail, and you must know the telephone number that lets you access the service you subscribe to. For more information, see the *Electronic Mail* chapter in *Part 4 Desktop Accessories* in Volume 2.

Fax: Opens a fax communications program and lets you send and receive fax messages through a fax board in your computer or, if you are on a network, through a fax board in any computer on the network. For more information, see the *Fax Communications* chapter in *Part 4 Desktop Accessories* in Volume 2.

Clipboard: Opens a temporary storage space for transporting information between applications using simple cut, copy, and paste commands. For more information, see the *Clipboard* chapter in *Part 4 Desktop Accessories* in Volume 2.

Calculators: Opens a menu with the following calculator choices:

Algebraic: Opens an Algebraic Calculator and lets you perform routine mathematical calculations. For more information, see the *Algebraic Calculator* chapter in *Part 4 Desktop Accessories* in Volume 2.

Scientific: Opens a Scientific Calculator and lets you perform scientific calculations. For more information, see the *Scientific Calculator* chapter in *Part 4 Desktop Accessories* in Volume 2.

Programmer's: Opens a Programmer's Calculator and lets you perform programming calculations. For more information, see the *Programmer's Calculator* chapter in *Part 4 Desktop Accessories* in Volume 2.

Financial: Opens a Financial Calculator and lets you perform financial calculations. For more information, see the *Financial Calculator* chapter in *Part 4 Desktop Accessories* in Volume 2.

ASCII Table: Opens an ASCII (American Standard Code for Information Interchange) table, associating a number with a letter, number, punctuation mark, or control character. For more information, see the *Utilities* chapter in *Part 4 Desktop Accessories* in Volume 2.

Running Applications from the Menu Window

The Menu Window contains the names of the applications that can be run from PC Tools Desktop. See the next chapter, *Managing Applications*, for instructions on displaying the Menu Window, adding and deleting applications, and organizing the entries.

TIP *Install the Task Switcher to take advantage of the ability to run as many as eight applications and switch between them easily. See the* Task Switcher *chapter in* Part 3 Data Recovery and System Utilities *in this volume for more information.*

1. Choose **Windows ➤ Menu Window.**

   The main Menu Window appears in a quarter of your screen.

2. Move the highlight bar to the application you want to run and press Enter.

   or

- Type the quick key (highlighted letter) for the application you want to run.

  or

  Move the highlight bar to the application you want to run and choose **Open** from the File menu.

  or

- Double-click the application name with the mouse.

After the application finishes, you return to the main PC Tools Desktop screen.

You can customize each application in your Menu Window, using the properties in the Program Item Information dialog boxes, as explained in the next chapter. For example, you can list specific command-line options, designate a quick key, force applications to wait for your response before re-entering PC Tools Desktop, or have applications exit to DOS.

You can also set up an application to run with specific types of files. Then you can select that type of file from the File List and launch the application from the Menu Window. PC Tools Desktop runs the application and opens the selected file. See the next chapter for instructions on associating a file with an application.

Running Applications Using Drag and Drop

If you work with a mouse, you can drag and drop a file or group of files from the File List onto an application name in the application window. This runs the application with the selected files. For example, you can select a group of files, drag and drop them onto the Central Point Backup application, and back them up.

NOTE *To start an application using drag and drop, the application must be able to accept a list of files and you must turn on the* Accept dropped files *option. See "Program Item Information" in the* Managing Applications *chapter in this part for more information on using this option.*

1. Select the file or group of files in the File List that you want to run.
2. Hold down the mouse button and drag the files to the application name in the Menu Window.
3. Release the mouse button.

Running Applications with the DOS Command Line On

If the DOS command line is turned on when you run an application from the Menu Window, you can modify the commands used to run the application. This lets you run an application with a different configuration than you defined when you added the application to the list.

NOTE *When you modify the commands that appear on the command line, none of the options specified in the Program Item Information dialog boxes are used.*

1. Move the highlight bar to the application you want to run, or click it once.

   The commands you have specified for running the selected application appear on the DOS command line. (These commands are specified in the Commands text box of the Program Item Information dialog box when you add an application to the Menu Window. See the *Managing Applications* chapter in this part.)

2. To modify the commands that appear on the command line, press Tab to activate the DOS command line and then type the new information.

   For example, you can type different options. Any letters you type are placed on the DOS command line.

3. Press Enter.

Running Applications from the File List

You can run an application from the File List by selecting either the executable file itself or a data file that is associated with the application you want to run.

- When you select an executable file from the File List, PC Tools Desktop runs the file.
- When you select a data file, PC Tools Desktop runs the application associated with the file. For example, you can select a file with the .DOC extension to run Microsoft Word. You must first associate the file with an application as described in "Associating a File with an Application" in the *Managing Applications* chapter in this part.

Launching an Application File

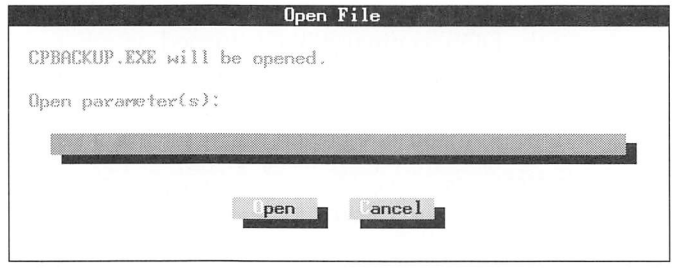
1. Select an executable application in the File List.

   An executable file has an extension of .BAT, .COM, or .EXE.

2. Choose **Open** from the File menu or press Ctrl Enter.

   or

- Double-click the file with the mouse.



3. Enter any parameters you want to use.

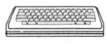
   Parameters are command-line options that some applications need to run correctly. Other applications do not require parameters, but allow you to use them to specify options. For example, Central Point Backup allows you to specify options like /R, which automatically starts restore mode, or a drive letter, which indicates the drive to back up. See your application manual for more information on parameters.

4. Choose **Open**.

TIP *You can add applications that you use often to the Menu Window with a predefined set of parameters so that you don't have to enter the parameters each time you run the application. See "Running Applications from the Menu Window" earlier in this chapter and "Adding an Application to the Menu Window" in the* Managing Applications *chapter in this part.*

Launching a Data File and Associated Application

NOTE *Before using this procedure, you must associate the file you are viewing with the application you want to run. See "Associating a File with an Application" in the* Managing Applications *chapter in this part for instructions.*



- Select a data file in the File List and choose **Open** from the File menu or press Ctrl Enter.

  or

- Double-click a data file in the File List.

  or

  Click a data file name and, holding down the mouse button, drag the file over the application name in the application window, then let up on the button.

  This is called *drag and drop*. It drops the file onto the application and loads the application automatically.

NOTE *You must turn on the* Accept dropped files *option if you want to use drag-and-drop. See the section "Program Item Information" in the* Managing Applications *chapter in this part.*

After the application finishes running, you return to the main PC Tools Desktop screen (unless you have configured the application to exit to DOS).

If the selected file is not an application file and there is no application associated with it, an error message tells you that the extension is not .EXE, .COM, or .BAT. Either select an executable file or associate the file with an application.

Using the Quick Run Command

When the Quick Run option is on, PC Tools Desktop does not free up memory prior to running an application. Memory is freed when you exit from PC Tools Desktop.

As long as your applications do not need all available memory, the Quick Run option allows them to start much faster because no memory swapping takes place first. If your applications do not run or you do not have enough memory to load a large data file, turn off the Quick Run option. The memory is then freed prior to running your application. There will be a slight pause before it is run, but nearly all of your computer's memory will be available to the application.

The Quick Run command is available only when PC Tools Desktop is running stand-alone. Applications in the Menu Window have independent Quick Run control on an application-by-application basis (see "Program Item Information" in the *Managing Applications* chapter in this part).

- Choose **Execution ➤ Quick Run** from the Configure menu.

  A check mark appears next to the command when it has been switched on.

Running Applications from a View Window

If you aren't sure what file you want to work with, you can view your files in a View window. When you find the one you want to work with, you can launch the file's associated application and load the file you are viewing into the application, without leaving the View window.

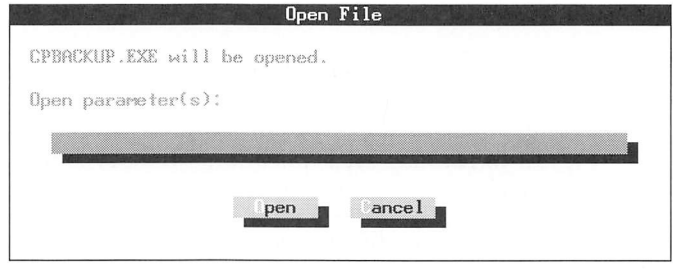
NOTE *Before using this procedure, you must associate the file you are viewing with the application you want to run. See "Associating a File with an Application" in the* Managing Applications *chapter in this part for instructions.*

1. Select the file you want to view.
2. Choose **Quick View** from the File menu.

   or

   Choose **View Window** from the Windows menu.

   This loads the selected file into a View window.
3. Choose **Open** from the File menu.



4. Enter any parameters you want to use.

   Parameters are command-line options that some applications need to run correctly. Other applications do not require parameters, but allow you to use them to specify options. For example, Central Point Backup allows you to specify options like /R, which automatically starts restore mode, or a drive letter, which indicates the drive to back up. See your application manual for more information on parameters.
5. Choose **Open**.

After the application finishes, the main PC Tools Desktop screen appears (unless you have configured the application to exit to DOS).

If the selected file is not an application file and there is no application associated with it, an error message tells you that the extension is not .EXE, .COM, or .BAT. Either select an executable file or associate the file with an application.

For more information about using View, see "Viewing Files" in the *Managing Files* chapter in this part.

Running Applications from the DOS Command Line

When the DOS command line is turned on, you can run applications the same way you would from the DOS prompt. For example, to run CHKDSK, type the following command on the DOS command line:

```
CHKDSK [Enter]
```

You can run applications from the DOS command line without exiting from another application you are using.

NOTE *PC Tools Desktop frees virtually all of your computer's memory before running the second application, then restores it for use by the first application when the second is done.*

Running DOS Commands from PC Tools Desktop

It is easy to run DOS commands from PC Tools Desktop by using the DOS command line, as described in the *Configuring PC Tools Desktop* chapter in this part. However, when the DOS command line is turned off, the quickest way to run a DOS command is with the Run command.

1. Choose **Run DOS Command** from the File menu.
2. Type the command you want to execute in the Run DOS Command dialog box.
3. Choose **OK**.

Pausing After Executing a Command or Application

You can specify whether commands or applications executed from within PC Tools Desktop should pause at the last screen and display the following message before re-entering PC Tools Desktop:

```
Press any key or mouse button to re-enter PC Tools
Desktop
```

▶ Choose **Execution ➤ Wait on DOS** from the Configure menu.

Managing Applications

PC Tools Desktop's Menu Window makes it easy to organize all of your applications according to type, task, project, or whatever works best for you. You can define groups of applications, create groups within groups, customize versions of an application to perform specific tasks, and associate applications with files that have a particular file name or extension.

Here's what you'll find in this chapter:

- **The Menu Window** describes the ways you use the Menu Window and explains the commands assigned to the function keys when the Menu Window is active.
- **Automatically Updating the Menu Window** explains how to automatically add applications to the Menu Window and how to import a menu structure from Direct Access menus.
- **Organizing Your Menu Window** explains how you organize your Menu Window.
- **Configuring Your Menu Window** explains how you configure your Menu Window.
- **Locating Applications in the Menu Window** explains how you locate applications in your Menu Window.
- **Adding a Group to the Menu Window** explains how you add a group of applications to the Menu Window.
- **Adding an Application to the Menu Window** explains how you manually add applications to your Menu Window.
- **Program Item Information** describes the various properties you can define for each item added to the Menu Window.
- **File and Application Association** explains how you associate a file with an application name.
- **Revising the Menu Window** explains how you revise the Menu Window.
- **Example: Adding Lotus 1-2-3 to the Menu Window** provides a detailed example for adding Lotus-1-2-3 to your Menu Window.

The Menu Window

The Menu Window contains the names of applications you can run while working in PC Tools Desktop. During installation, you have the option to search for applications to add to the Menu Window. PC Tools applications that you installed appear on the list already. You can add more applications following the instructions in this chapter.

There are two ways you can use the Menu Window:

- Exclusively, where only the Menu Window appears. This lets you use PC Tools Desktop primarily as an application launcher.
- In cooperation with other PC Tools Desktop windows.

You can run any application on the Menu Window, without leaving PC Tools Desktop. For example, if you are working in PC Tools Desktop and you want to run WordPerfect to update a report, you use the Menu Window to perform the equivalent of all this:

- Exit from PC Tools Desktop to DOS.
- Change to the directory containing WordPerfect.
- Enter the command and parameters that run WordPerfect.
- Retrieve the report you want to update.
- Return to PC Tools Desktop when you are finished.

You can run applications that require multiple commands and keystrokes more easily when they are set up in the Menu Window. You can add your own applications to the list and organize them as you like. You can also edit, delete, copy, and reorder the entries on the list at any time.

Menu Window Function Keys

The following function keys are available when you view the Menu Window.

Function Key	Description
F1 Help	Displays an online help panel with information about the command or feature you are using.
F2 AppSrch	Opens the Search for Applications dialog box, allowing you to search for applications to add to the Menu Window.
F3 Exit	Exits from PC Tools Desktop.
F4 New	Adds a new group or item to the Menu Window.
F5 Edit	Allows you to edit the properties of a group or item on the Menu Window.
F6 Config	Allows you to disable the switch to PC Tools Desktop, require paths to certain applications, configure a password, and display an information panel containing descriptions of the Menu Window items.
F7 Cut	Allows you to cut a group or item on the Menu Window so you can paste it in another location.
F8 Copy	Makes a copy of an item in the Menu Window that you can place it at another location in the list.
F9 Paste	Allows you to paste a copied or cut entry at the location you want on the Menu Window.
F10 Menu Desktop	Lets you display the Menu Window as the only feature on screen. When the Menu Window is the only thing displayed, pressing F10 returns you to the main PC Tools Desktop window.

Automatically Updating the Menu Window

You can automatically update the applications listed in the Menu Window at any time. In addition, you can automatically convert an existing Direct Access menu structure into the PC Tools Desktop Menu Window.

Updating the Applications in the Menu Window

1. From within PC Tools Desktop, choose **Menu Window** from the Windows menu to display the Menu Window.
2. Make the Menu Window the active window.

   Press Tab until the Menu Window is active, or click the Menu Window.
3. Choose **Application Search** from the File menu or press F2.
4. Select the options you want in the Application Search dialog box and choose **OK**.

   Search network drives: Searches any available network drives in addition to your local drives for applications to add to the Menu Window.

   Create a separate network group: When selected together with the Search network drives option, creates a Network group to contain any applications found on network drives.

   Your local drives and, if you selected Search network drives option, any available network drives are searched for applications. The main PC Tools Desktop screen reappears and the Menu Window shows the applications found during the search.

Importing Direct Access Menus

1. From within PC Tools Desktop, choose **Menu Window** from the Windows menu to display the Menu Window.
2. Make the Menu Window the active window.

   Press Tab until the Menu Window is active, or click the Menu Window.
3. Choose **Import Direct Access** from the File menu.
4. When prompted, choose **OK** to search for Direct Access menus.

   PC Tools Desktop searches your drive for Direct Access menus. If any are found, a new group, called Imports, is added to the Menu Window. This group contains all the menus you had structured in Direct Access. You can reorganize the menus to suit your needs following instructions in the remainder of this chapter.

Organizing Your Menu Window

You can define each entry that you add to the Menu Window as a group or as an individual application (known as an *item*). This lets you organize your entries so you can find and use them easily. Groups can contain other groups or applications. You can nest multiple levels of groups to create a hierarchy of groups.

For example, you can list all the applications you use to create a document together in a group called Document Applications. Then you can divide those files into groups called Word-Processing Applications, Graphics Applications, and Printing Applications. You can further divide each group if needed, so that similar applications remain together and you can always find an application when you are ready to use it.

Configuring Your Menu Window

You can configure your Menu Window using global options that control every application in your Menu Window. To configure the Menu Window globally:

1. Make the Menu Window active and press F6.

   The Menu Configuration Options dialog box appears.

2. Select the options you want and choose **OK**.

   Disable F10 switch to PC Tools Desktop: Disables the F10 function key when using the Menu Window by itself. When selected, you cannot switch from the Menu Window display to the full PC Tools Desktop display without reconfiguring this option.

   Require a path for each program item: Requires every application included in the Menu Window to contain a path before it can be run.

   Password protect configuration: Lets you set a password that you must supply before you can open the Menu Configuration Options dialog box. When you select this option, enter the password you want to use in the Password text box.

   Display item information panels: When using the Menu Window by itself, selecting this option displays a panel containing a description of the selected program or group.

Locating Applications in the Menu Window

When the Menu Window is first displayed, the contents of the main menu group appear. Each time you open a group in the Menu Window, the name of that group moves up to the title bar and the group's contents appear. You would have to open several groups to locate an application that is nested several levels deep.

After you open a group and display its contents, the name of the group previously displayed appears on the line under the title bar. This name is preceded by two dots, indicating that it is the "parent" group. When you want to close the current group and return to its parent, you can open this group. This makes it easy for you to retrace your steps through each group opened.

1. Highlight the group containing the application you want to find.
2. Press Enter or choose **Open Menu Item** from the File menu.

   If the application you want to find is nested deeper, repeat steps 1 and 2 until the name of the application appears on the list.

   or

- Double-click the group that contains the application you want to find.

  If the application you want to find is nested deeper, repeat this step until the name of the application appears on the list.

Opening the Parent Group

The parent group name appears on the line under the title bar.

- Press Esc.

  Pressing Esc repeatedly steps backward through each group you have opened.

  or

  Highlight the parent group name, then press Enter or choose **Open Menu Item** from the File menu.

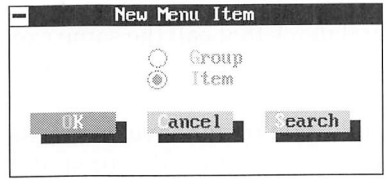
  or

- Double-click the parent group name.

Adding a Group to the Menu Window

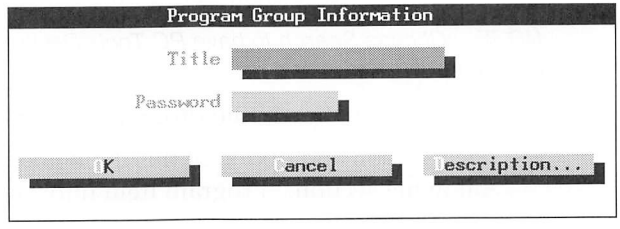
You can define about 200 entries in the Menu Window.

1. Select the group you would like to add the new group to.
2. Choose **New Menu Item** from the File menu or press F4.



3. In the New Menu Item dialog box, choose **Group**, then choose **OK**.

NOTE *Choose **Search** to have PC Tools Desktop search for applications automatically.*



4. Enter a name for the new group in the Title text box.
5. Enter a password in the Password text box if you would like the group to be password-protected.

   Password protection assures that no one can open or make changes to this group without knowing the password that you supply here. This information is optional.

6. If you would like to enter a description of the group or any notes to be associated with the group, choose **Description**.

   The File Editor window appears, allowing you to enter information. Editing commands are described in "Using the PC Tools Desktop File Editor" in the *Using Editors* chapter in this part. When you finish, press Esc to save and exit from this file. (See "Describing Menu Window Entries" in the *Starting PC Tools Desktop* chapter for more information.)

7. Choose **OK** in the Program Group Information dialog box.

Adding an Application to the Menu Window

When you add an application item to the Menu Window, you must configure it by defining its properties. The executable application itself is not "on" the Menu Window—just an item name that calls the executable application file with a specific configuration. For example, you can specify command-line options, the path to the directory containing the data files you want to use with the application, and file names to associate with the application.

Several items that call the same executable file can reside on the Menu Window at the same time, each with a different name and set of properties. Thus, you can save time by customizing items to perform specific tasks. For example, you might have one menu entry that calls Microsoft Word in the directory containing all your staff reports and another version that calls it in the directory containing files for a novel you are working on.

1. Select the group you would like to add the new application to.
2. Choose **New Menu Item** from the File menu or press F4.
3. In the New Menu Item dialog box, choose **Item**, then choose **OK**.

NOTE *Choose **Search** to have PC Tools Desktop search for applications automatically.*

4. Enter information in the Program Item Information dialog box.

   Each section and option of this dialog box is explained in detail in the following section, "Program Item Information."

5. When you finish configuring the program group or item, choose **OK**.
6. Save your the revised Menu Window in one of the following ways:

   ▶ Choose **Save Configuration** from the Configure menu.

   or

   Exit from PC Tools Desktop, select the **Save Configuration** checkbox, and choose **OK**.

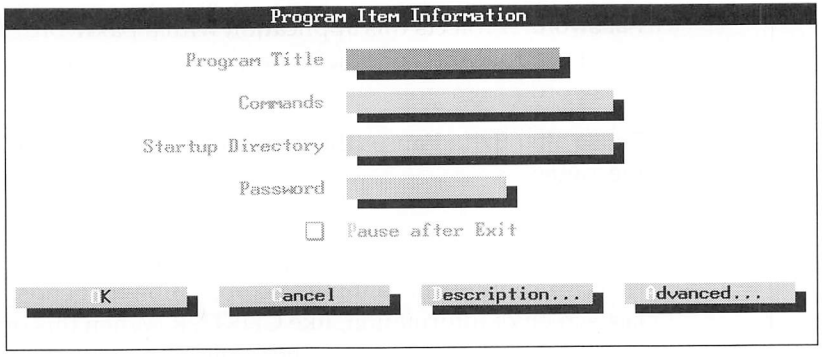
Program Item Information

Two dialog boxes let you define the properties of each item added to the Menu Window. You can edit the information in these dialog boxes by using the Properties command (see "Editing Application Properties" later in this chapter). Unless otherwise specified, each text box has a maximum limit of 256 characters.

The text boxes allow you to enter more characters than are displayed on the screen. As you type characters, the entry scrolls automatically. You can also use ← or → to move the cursor one character left or right, and Home or End to position the cursor at the beginning or end of an entry.

To type over characters, scroll to where you want to place the characters and type the new characters. To insert characters, press Ins to enter insert mode. To delete text, position the cursor on the character you want to delete and press Del, or place the cursor one position to the right of the character you want to delete and press Backspace.

Basic Application Information



Program Title: The name that appears in the Menu Window. You can specify a quick key for the application by preceding the letter you want to highlight with a caret (^).

For example, you can add an entry called Paradox and designate P as the quick key by typing this:

```
^PARADOX
```

When the application name appears on your Menu Window, the P will be highlighted. This means that when the Menu Window is active, you can run Paradox by pressing P.

Commands: Include the name of the application's executable file and any parameters to be passed to the application. You also need to specify a path name for the application if it is not in the current DOS directory or in the PATH statement of your AUTOEXEC.BAT file.

For example, if you want to make a full backup of drive C, enter this:

```
CPBACKUP.EXE C: /FULL
```

For more information on parameters, see the manual for your application. For details on using keywords in this text box, see "Using Keywords" later in this chapter.

Startup Directory: The drive and directory where the application's data files are located. If you keep the application and data files in different directories, specify the path for the data files here, and the path for the application file in the Commands text box. If you leave this blank, PC Tools Desktop looks for the data files in the same directory as the executable file. For details on using keywords in this text box, see "Using Keywords" later in this chapter.

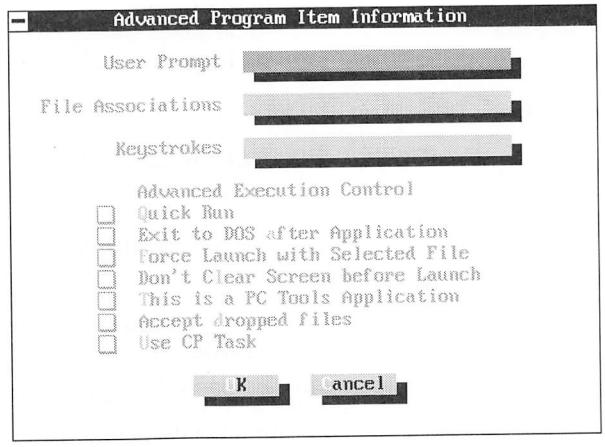
Password: Protects this application with a password. Anyone who attempts to run this application or edit its properties will be prompted to enter this password.

Pause after Exit: Pauses the final screen of an application and displays this message:

```
Press any key or mouse button to continue.
```

This is useful when running an application that ends as soon as it displays its last screen of information, like CHKDSK. When this option is off, PC Tools Desktop resumes as soon as the application ends and replaces the last application screen with the PC Tools Desktop screen.

Advanced Program Information



All information in this dialog box is optional.

User Prompt: Halts the application just before it runs and displays any text you type here followed by this message: "Press any key or mouse button to continue." You might want a user prompt for applications that require a *key disk* (a special disk that serves as a copy-protection safeguard). The prompt can remind you to insert the key disk; for example, Insert Program Disk. After you insert the disk and press a key or mouse button, the application runs. For details on using keywords in this text box, see "Using Keywords" later in this chapter.

File Associations: Defines the files you want to associate with this application. You can specify a file name and an extension.

- Wildcard characters are allowed for file name and file extension: The question mark (?) represents a single character and the asterisk (*) represents multiple characters (up to an entire file name or extension).
- Multiple file associations are allowed. Separate them with spaces and use a hyphen to exclude file specifications.

For example, *.WK1 *.WKS associates all files that have extensions of .WK1 and .WKS with this application. *.WK? -*.WKQ associates all files whose extensions begin with .WK, except those with extension .WKQ.

See *Part 1 Getting Started* in this volume for more examples of specifying file names with wildcards. For information on how applications and their associated files can be used, see "Associating a File with an Application" later in this chapter.

Keystrokes: A key or combination of keys passed to the application as keyboard input. This entry is especially useful for an application that requires a keystroke sequence to load a file.

There are three methods for entering keystrokes:

- Press the actual key.

  For example, press L and / to enter L and / on the Keystrokes line.

  or

  Enter keys represented by multiple letters between left and right angular brackets (<>).

  For example, to pass Esc to the application, press <, E, S, C, >, which appears on the Keystrokes line as <ESC>. If you did not enter the brackets, your entry would be passed as E, S, and C.

  Instead of typing brackets, you can press F7 or click **Litkey** on the message bar before pressing a key. F7 directs PC Tools Desktop to insert the next key pressed between brackets.

  For example, press F7, Alt, and H to enter the key sequence Alt H. Then press F7 followed by Home to enter Home. <ALT>H and <HOME> appear on the Keystrokes line.

  or

  Enter a keyword.

  Choose **Keywrd** from the message bar to display a list of keywords, then select each keyword you want and choose **Insert**. Keywords are described in "Using Keywords," later in this chapter.

See "Example: Adding Lotus 1-2-3 to the Menu Window" at the end of this chapter for an example of how you can use Keystrokes.

Advanced Execution Control Options

Quick Run: Runs the application, without freeing the memory used by PC Tools Desktop. With this option off, PC Tools Desktop frees as much conventional memory as possible by writing a copy of what is in conventional memory out to disk or to expanded memory. In resident mode, PC Tools Desktop frees all its memory except the small resident portion that is always there.

Turn off this option for applications that require more conventional memory than is available (like database, spreadsheet, or word-processing applications). These applications will take longer to start because extra time is required to free memory. Turn on this option for applications that do not need additional memory so they will start more quickly.

Exit to DOS after Application: Exits to DOS after the application finishes. When this option is off, you return to PC Tools Desktop.

Force Launch with Selected File: Passes the first selected file name to this application as command-line input. If no files are selected, PC Tools Desktop passes the highlighted file name. This allows you to run a file with an application it is not associated with.

You can turn on this option if the application allows the file name to be input from the DOS command line. For example, when you run Word from the DOS prompt, you can specify the file name after the application name—for example, WORD SAMPLE.DOC. Turn off this option if the application does not allow the file name to be specified on the command line. For example, Lotus 1-2-3 can only pass the file name from the keyboard after the application starts. See the Keystrokes option for information on passing the file name as keyboard input.

Don't Clear Screen before Launch: Prevents PC Tools Desktop from erasing all data from the screen before launching another application. When this option is not selected, PC Tools Desktop clears the screen before launching another application.

This is a PC Tools Application: Ensures the fastest access to another PC Tools application without screen flicker.

Accept dropped files: Allows the application to accept and run files that are dragged and dropped onto them. This option must be selected for the application to use drag and drop. Central Point Backup and Central Point Anti-Virus are automatically configured with this option on. For this option to work with an application, the application must support working with a list of files. See the *PC Tools Desktop Technical Information* chapter for more information.

Use Task Switcher: Allows use of the Task Switcher program when launching the application. Task Switcher is a memory-resident program that allows you to have up to eight DOS programs running at the same time and switch between them. To use this option, you must start PC Tools Desktop using the /S option. For more information, see the *Task Switcher* chapter in *Part 3 Data Recovery and System Utilities* in this manual.

Using Keywords

You can use keywords to help specify commands, startup directory, user prompt, and keystrokes.

1. Highlight the option in the Advanced Program Item Information or the Program Item Information dialog box you want to select a keyword for.
2. Choose **Keywrd** or press F8 to select from a list of keywords.

   If **Keywrd** does not appear on the message bar, you cannot use a keyword with this option.
3. Select the keyword you want to use, then choose **Insert**.

   The selected keyword appears in the text box for the selected option.
4. Repeat step 3 for each keyword you want to insert.
5. When you have finished selecting keywords, choose **OK**.

Keywords pass a series of keystrokes to the application. For example, these keywords pass the following keystrokes:

NOTE *The available keywords vary, depending on the text box selected when you press* F8.

<Path> Enters the full path and file name of the selected file. If you select the Lotus 1-2-3 file SAMPLE.WK1, in the C:\123 directory, from the File List, <Path> passes the keystrokes C:\123\SAMPLE.WK1 to the Lotus 1-2-3 application as if you had entered them on the line for the selected option. <Path> functions as a variable, so you can substitute a different file name each time by selecting a file from the File List.

<Drive> Enters the letter of the drive containing the selected file (without entering the colon).

<Dir> Enters the path of the directory containing the selected file, without including the drive letter. For example, \123

<Dir\> Enters the path of the directory containing the selected file, without the drive letter and followed by a backslash. For example, \123\

<File> Enters the full name and extension of the selected file. For example, SAMPLE.WK1

<Filename> Enters the name of the selected file, without its extension. For example, SAMPLE

<Ext> Enters the extension of the selected file. For example, WK1

<ListFile> Creates a file containing the list of files selected when the program item is chosen in the Menu Window. The file is saved in the PCTOOLS\DATA directory. If the application specified in this item accepts file lists, it can act upon the files listed. For example, you can use this option to have the PC Tools Wipe application delete a list of selected files.

<Drag> Creates a file containing the list of files selected when the program item is chosen in the Menu Window. If the program accepts drag-and-drop items, the selected files can be dragged to the program item, dropped, and the program accepts the entire list.

<NL> Enters a new line command. This is equivalent to having pressed Enter when typing a command.

<DelayN> Pauses the number of seconds specified by N before proceeding.

<Typein> Allows input of additional information before the command is executed.

Adding Literal Keystrokes

In the Advanced Program Item Information dialog box, when you select the Keystrokes text box, you can specify either the keywords shown in the previous section or you can record keystrokes as you make them.

- Press F7, then press the key or key combination you want to insert.

File and Application Association

If you usually use an application with files that have a certain extension, you can associate those files with the application. This provides the following advantages:

- When you use PC Tools Desktop to open a file, its associated application is run automatically. If you associate .DBF files with dBASE, then dBASE runs whenever you open a .DBF file.
- When you run an application, an associated file that is selected from the File List will automatically be loaded into the application. If you associate .TXT files with WordPerfect, you can select MEMO.TXT from the File List and then run WordPerfect. WordPerfect will come up displaying MEMO.TXT for you to edit.

You cannot associate a file name or extension with more than one application at a time.

Associating a File with an Application

- Specify the file name and extension in the File Associations text box of the Advanced Program Item Information dialog box.

  You can access this dialog box when you add a new application to the Menu Window. You can also use the Properties command from the File menu to edit the properties of an application that is already on the Menu Window. The File Associations text box is described in "Program Item Information," earlier in this chapter.

You can associate multiple file names and extensions with an application. Be sure to separate multiple file associations with spaces and use a hyphen to exclude files. Examples of specifying file names with wildcards are given in the description of the File Associations text box and in *Part 1 Getting Started* in this volume.

Disassociating a File and an Application

1. Select the application name in the Menu Window.
2. Choose **Properties** from the File menu or press F5.
3. Delete the file name, extension, or both whose association you want to remove from the File Associations text box of the Advanced Program Item Information dialog box.
4. Choose **OK**.

Running an Associated File with a Different Application

If you have associated a file with one application, you can still run the file with other applications. These are the two methods:

Method 1

To use this method, the **Force Launch with Selected File** option must be turned on in the Advanced Program Item Information dialog box.

1. Select the file you want to use.
2. Select the application item on the Menu Window and press Enter or double-click it.

   The application loads the selected file.

Method 2

1. Choose **Run DOS Command** from the File menu.
2. Type the file name of the application you want to run, followed by the name of the file.

   If the application is located in a directory that is not listed in the PATH statement of your AUTOEXEC.BAT file, you should type a complete path name here.
3. Choose **OK**.

Revising the Menu Window

After you enter groups and applications, you can copy an item in one group and place the copy in the same or a different group, delete groups and items, reorder the items in a group, and edit the properties assigned to a group or item.

Copying an Application Item

Use this procedure to copy an item in the Menu Window and place the copy at another location in the list. The item name and all its properties are copied—not the application's executable file.

1. Position the highlight bar over the name of the application you want to copy or click to select it.
2. Choose **Copy Menu Item** from the File menu or press F8.
3. Position the highlight bar where you want to place the copy.
4. Choose **Paste Menu Item** from the File menu or press F9.

   This adds the copy to the group displayed in the Menu Window. The copy is placed immediately before the item that occupied the position you highlighted. You can then edit the item name and other properties by following the procedure given later in this chapter.

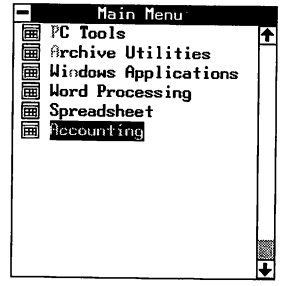
This procedure is particularly useful for customizing applications that you run often. You can copy an application in the Menu Window, then create a different "version" of the application by editing the properties of the copy. See "Editing Application Properties" later in this chapter for more information.

For example, if you use Lotus 1-2-3 to track weekly expenses separately from monthly expenses, you might set up a group of Lotus applications in the Menu Window. Within that group, one application item could run Lotus and load your weekly spreadsheets—enter `WEEK*.123` in the File Associations text box of the Advanced Program Item Information dialog box. You could use this version of Lotus each week to record the week's expenses. Then you could create a new application item by making a copy of this entry, giving it a slightly different name, and changing its File Associations to `MONTH*.123`. You could use the new version each month to record totals from the last four weeks in a monthly spreadsheet.

Reordering Entries in the Menu Window

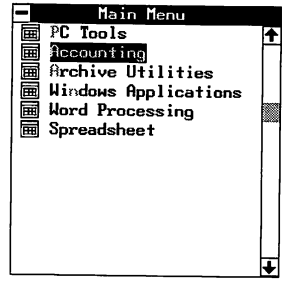
NOTE *When you move a group, the items and groups contained in that group are also moved.*

1. Position the highlight bar over the application or group name that you want to move or click to select it.



2. Choose **Cut Menu Item** from the File menu or press F7.
3. Position the highlight bar where you want to move the entry.
4. Choose **Paste Menu Item** from the File menu or press F9.

   This moves the selected application or group to its new location, where it is placed immediately before the entry you highlighted.



Deleting from the Menu Window

You can remove groups and applications that you no longer want on the Menu Window.

NOTE *When you delete a group, the items and groups contained in that group are also deleted.*

1. Select the group or item you want to delete.
2. Choose **Delete Menu Item** from the File menu.

   If the selection is password-protected, you are prompted to enter the assigned password.
3. Choose **Delete** to confirm the deletion.

Editing Application Properties

Whenever you add a group or application to the Menu Window, you specify its properties. Properties can include a name, a password, parameters, and other information. Group properties are defined in the Program Group Information dialog box, and application properties in the Program Item Information dialog boxes. You can revise these properties as your needs change.

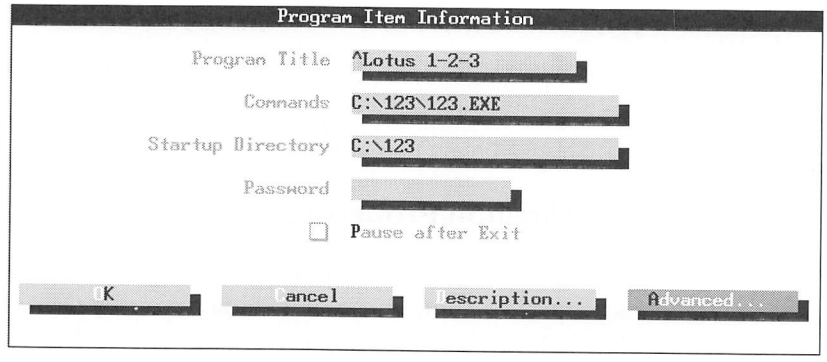
1. Select the group or item you want to edit.
2. Choose **Properties** from the File menu or press F5.

   If the item is password-protected, you are prompted to enter the assigned password.
3. Modify the options in the dialog boxes as needed.

   If you are editing a group, the Program Group Information dialog box appears. Its options are described in "Adding a Group to the Menu Window" earlier in this chapter. When editing an item, the Program Item Information dialog boxes appear. Their options are described in "Program Item Information" earlier in this chapter.
4. Choose **OK**.

Example: Adding Lotus 1-2-3 to the Menu Window

After adding Lotus 1-2-3 to the Menu Window as described below, you can run it automatically. Just select the .WKS or .WK1 file you want to work on from the File List and press Ctrl Enter or double-click. When you are finished, you return to PC Tools Desktop.



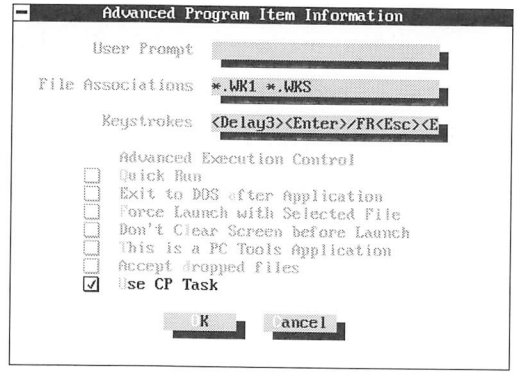
Program Title: ^Lotus 1-2-3. In this example, you have designated L as the quick key. When the Menu Window is active and this application is displayed, you will be able to start it by pressing L.

Commands: C:\123\123.EXE. In this example, no command-line parameters are listed.

Startup Directory: C:\123. In this example, the spreadsheet files are in the same directory as the application file.

Password: Not used.

Pause after Exit: Turned off because it isn't necessary.



User Prompt: Not used.

Files Associations: *.WK1 *.WKS.

Keystrokes: (Note that more keystrokes are entered than are displayed in the text box—the box scrolls as you type to allow you to enter up to 256 characters.)

<Delay3><Enter>/FR<Esc><Esc><Path><Enter>

<Delay3> causes a delay of three seconds after 123.EXE is executed by PC Tools Desktop. This allows the application to finish loading.

<Enter> clears the Lotus 1-2-3 copyright message and displays a blank 1-2-3 spreadsheet.

/ displays the 1-2-3 Main menu.

F selects the File command.

R selects the Retrieve command. In this example, this prompt appears:

```
Enter the name of the file to retrieve:
C:\123\*.WK?
```

<Esc> erases *.WK?

<Esc> erases C:\123\ and displays this prompt:

```
Enter the name of the file to retrieve:
```

<Path> passes the full path and file name of the file selected in the File List to Lotus 1-2-3. If you used the keyword <Typein> instead of <Path>, the application would pause at this point and allow you type in the name of the file you want passed to the application.

<Enter> accepts the file to be retrieved.

Quick Run: Turned off, because Lotus 1-2-3 will not have enough memory to run unless PC Tools Desktop frees up as much memory as possible.

Exit to DOS after Application: Turned off, so you return to PC Tools Desktop after Lotus 1-2-3 ends.

Force Launch with Selected File: Turned off, so that Lotus 1-2-3 is not passed the name of the selected file as command-line input. The file name must be passed as keyboard input.

Don't Clear Screen before Launch: Turned off because it's not necessary.

This is a PC Tools Application: Turned off because this is not a PC Tools application.

Accept Dropped Files: Turned off because Lotus 1-2-3 can not accept lists of files and thus does not work with drag and drop.

Use Task Switcher: Turned on to use the Task Switcher when opening this program.

Running Lotus 1-2-3

After adding Lotus 1-2-3 to the Menu Window as described above, it is easy to run Lotus 1-2-3 and automatically load the file you want to work on.

1. Select the .WKS or .WK1 file you want to work on from the File List.
2. Press Ctrl Enter or double-click.

or

1. Click on the .WKS or .WK1 file you want to work on from the File List.
2. Drag and drop it on the Lotus 1-2-3 program item in the Menu Window.

Managing Files

PC Tools Desktop makes it easy to work with files. Virtually everything you can do with files from the DOS prompt, you can do quickly and easily using PC Tools Desktop.

Here's what you'll find in this chapter:

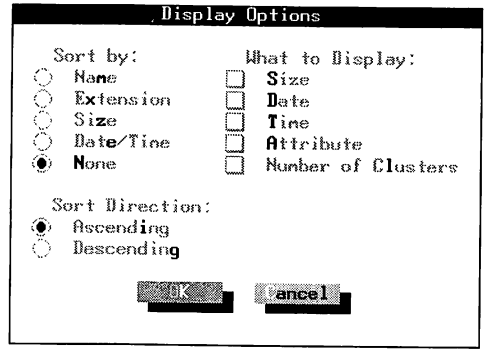
- **Changing File Display Options** explains how you change the way file characteristics appear in the File List window.
- **Selecting a Directory** explains how you select a directory to work with.
- **Selecting Files** explains how you select files to work with.
- **Unselecting Files** explains how you unselect files.
- **Locating Files** explains how you locate files in a directory, across directories, and across drives.
- **Viewing Files** explains how to use the View application from within PC Tools Desktop to look at the contents of a file.
- **Copying Files** explains how to copy a file or group of files from one drive to another, to the same drive with new file names, or to a different directory on the same drive.
- **Moving Files** explains how to move a file or group of files from one location to another. Moving files is just like copying them, except the files are automatically deleted from their original location once the copy is complete.
- **Comparing Files** explains how to compare two separate files to see if they are identical. You can also compare several pairs of files at once.
- **Renaming Files** explains how you rename an individual file or a group of files.
- **Deleting Files** explains how you delete files. How you undelete files is described in a following section.
- **Wiping Files** explains how you wipe files or clear them the disk.
- **Undeleting Files** explains how you undelete files.
- **Searching for Text in Files** explains how you search for specific text within files.
- **Printing Files** explains how you print the contents of files.

- **Printing a File List** explains how you print a list of file names in a directory.
- **Verifying Files** explains how you verify the integrity of files.
- **Changing File Attributes** explains how you change the attributes, date, and time of a file or group of files.
- **Getting File Information** explains how you display and understand file information.
- **Securing Files with PC Secure** explains how you encrypt and decrypt files using PC Secure.
- **Compressing and Decompressing Files** explains how to compress files so they occupy less disk space and decompress them when you are ready to use them again.
- **Mapping Files** explains how you display the location of files on disk.

Changing File Display Options

These options allow you to specify what information about the files appears in the File List and how file names are sorted. If you do not change the options, PC Tools Desktop displays only the file names and sorts the files in the order they are stored on the disk.

1. Choose **Display Options ➤ File Display Options** from the Configure menu.
2. In the Display Options dialog box, select a Sort by option if you want to sort the files.



You can order the files in your File List according to their names, extensions, size, or date and time. The default is for no sorting to occur.

3. If you have selected a Sort by option, specify whether you want the files to be sorted in ascending or descending order.

   Ascending is A to Z, smallest to largest, or least recent to most recent; descending is Z to A, largest to smallest, or most recent to least recent.

4. Select the What to Display options you want.

   You can display the file's size, date, time, attributes, and the number of clusters it occupies. The default is file name only.

NOTE *If you select these options when a vertical View window is displayed, you cannot see all the display options without scrolling horizontally in the File List. Selecting a horizontal View window provides more room in the File List. See "Viewing Files" later in this chapter for instructions.*

5. Choose **OK.**

6. Choose **Save Configuration** from the Configure menu to save the file display options for subsequent sessions.

Selecting a Directory

Before selecting files to work with, you must first select the directory that contains the files.

1. Press Tab to activate the Tree List.
2. Move the highlight bar to the directory you want to select.

   The File List shows the files contained in that directory.

3. Press Tab to activate the File List and select files.

   or

1. Click the directory name in the Tree List.

   The File List shows the files contained in that directory.

2. Click the file names that you want to select.

TIP *Speed Search makes it easy to find the directory you want to select in a long Tree List. See "Selecting Files with Speed Search" later in this chapter for instructions.*

Selecting Files

PC Tools Desktop allows you to perform many functions with files, such as copying, moving, and comparing. When the files you want to work with are displayed in the File List, you can select the ones you want in several ways. See the *Working in the PC Tools Environment* in *Part 1 Getting Started* in this volume for methods of selecting files with the keyboard or mouse.

File names are highlighted when they are selected. If you select more than one file, the selected files will be assigned numbers in the sequence they were selected.

If no files are selected, file operations are performed on the highlighted file. If several files are selected, press Shift along with a function key to perform the file operation on the highlighted file instead of the selected files.

Selecting All Files

1. Activate the list you want to select from.
2. Choose **Select All** from the File menu.

NOTE *The number of files selected and the total number of bytes they contain are listed on the status line at the bottom of the File List.*

Selecting Files with Speed Search

Speed Search lets you move quickly to a file listed in the active tree or File List.

1. Choose **Speed ➤ Speed Search** on the Configure menu to turn on the Speed Search option.

   A check mark appears next to an option that is turned on.
2. Press Tab to activate the File List.
3. Begin typing the name of the file you want to find.

   The Speed Search dialog box appears, containing the letters you type. As you type each letter, the highlight in the window moves to the first file that matches the letters you've typed so far. Unless your file names are very similar, you don't have to type the entire name to locate a file in the list, but you can type up to eight characters.
4. Choose **Next** to find the next matching file.
5. Press Enter to close the Speed Search dialog box, then press Enter again to select the highlighted file.

Selecting Files with Filters

You can use List Filter to define which files are listed in the File List, then use Select Filter to select files from that list. Use wildcard characters like * and ? to specify files with common file names, extensions, or characters. (See the *Working in the PC Tools Environment* chapter in *Part 1 Getting Started* for examples of using wildcards.)

Listing Files with the List Filter

List Filter allows you to list files from the active directory that have common file names, extensions, or characters.

1. Choose **Display Options ➤ List Filter** from the Configure menu.
2. Enter the file name, extension, or both that you want listed in the File List Filter dialog box.

   For example, *.* matches all files and shows the entire directory, but *.COM matches and lists only files with an extension of COM.
3. Choose **Display**.

   PC Tools Desktop displays the main PC Tools Desktop screen and displays only the files you selected in the list.

   To reset the file name and extension to *.*, choose **Reset**.

Selecting Files with the Select Filter

Select Filter allows you to select a group of files from the active directory that have common file names, extensions, or characters.

1. Choose **Display Options ➤ Select Filter** from the Configure menu.
2. Enter the file name or extension you want to select in the Select Filter dialog box.

   For example, *.* matches all files and selects all files in the directory. *.COM matches and selects only files with an extension of COM.
3. Choose **Select**.

   PC Tools Desktop returns to the main PC Tools Desktop screen with only the files that match your specifications selected.

   To reset the file name and extension to *.*, choose **Reset**.

Unselecting Files

If you change your mind and decide not to perform any action on the files you have selected, you can unselect one or more of them. See the *Working in the PC Tools Environment* chapter in *Part 1 Getting Started* in this volume for information about unselecting files using either the keyboard or mouse.

▶ Choose **Select Files** from the File menu.

Any files selected in the File List are unselected.

Locating Files

Locate calls the FileFind application, which allows you to locate specific files on your disk. You can then display these files in PC Tools Desktop's Located Files window and work with them individually or as a group, using the PC Tools Desktop file commands.

You can use Locate to do any of the following:

- Find a specific file or files with similar names and extensions, no matter where they are on your drive. For example, you can locate all your Lotus 1-2-3 files or all your .EXE files. See the *Working in the PC Tools Environment* chapter in *Part 1 Getting Started* in this volume for information on using wildcards to specify file names.
- Find files that contain specific characters, like a word or phrase. For example, you could find all your WordPerfect files that contain the phrase "Dear Mr. Norman."
- Find files with specific attributes and characteristics. For example, you could find all your system files that have been modified since March 18, 1992.
- Save the file specifications for files you need to locate on a regular basis. (This is called a *search group*.) When loading files later, you can select the search group instead of re-entering the file specifications.

See *Part 3 Data Recovery and System Utilities* in this volume for complete instructions on using FileFind to locate, view, and run files.

Locating Files and Returning Them to PC Tools Desktop

1. Choose **Locate** from the File menu.

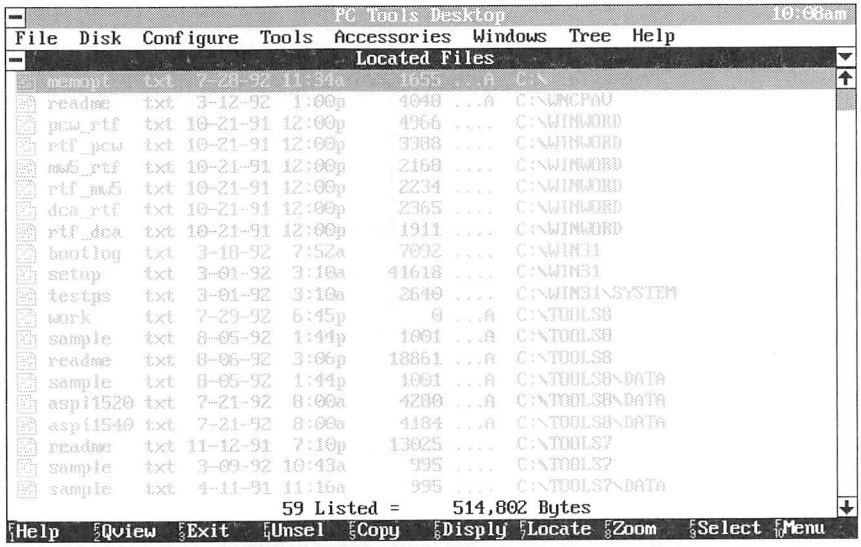
   The FileFind window appears.

2. Specify which files you want to find, then choose **Start**.

   All files that match your specifications are located and listed in the FileFind window. If you need to look at the files to determine which ones you want, you can view them within FileFind or after you return to PC Tools Desktop.

3. When the search is complete, press Esc or choose **Exit** from the File menu.

   You return to the PC Tools Desktop screen with the located files listed in the Located Files window. You can now select any files you want to work with and choose commands from PC Tools Desktop's menus.


PC Tools Desktop
File Disk Configure Tools Accessories Windows Tree Help
Located Files
59 Listed = 514,802 Bytes
Help Qview Exit Unsel Copy Disply Locate Zoom Select Menu

4. When you have finished, press Esc to exit from the Located Files window.

Viewing Files

PC Tools Desktop allows you to use the View application to look at the contents of a file. You can use View in PC Tools Desktop to do the following:

- View the files generated by popular applications in their native format—without starting the application or even knowing which application created the file. For example, when you view a dBASE file, View automatically selects the proper viewer and displays the file approximately as it would appear in dBASE itself. (However, View is not a database application, so you can't use it to make changes to the file.)
- View files that you have accidentally or intentionally deleted before undeleting them. This is useful if you are not sure which file you want to undelete.
- View located files to determine which one you want to work with.
- Run the application associated with the file in the View window.

Please refer to *Part 3 Data Recovery and System Utilities* in this volume for complete instructions for using View.

1. Select the files to be viewed in the File List.

   If you don't select files, the highlighted file is the one you view.

2. Choose **View Window** from the Windows menu.

   The View window appears with the type of viewer as the title of the window. View tries to determine the type of file you are viewing and load it into the correct viewer. If View does not recognize the file, it looks for text in the file. If it finds text, it loads the file into the Text View window. If it does not find text, it loads the file into the Binary View window.

   Commands unique to View are available on the message bar when the viewer is active.

NOTE *If you are using the dual-list display and open the View window, the View window replaces the lower set of windows. The upper set of windows stays the same unless the lower set of windows was active when you opened the View window; in that case, the lower set replaces the upper set.*

3. Highlight a new file in the File List to view a different file.

   The file previously displayed in the View window is replaced with the currently highlighted file. You can take a quick look at the contents of file after file, with only one keystroke or mouse click.

NOTE *To load a file into a different viewer, make sure the View window is active, then press* F6 *and select the viewer you want.*

Running an Application from the View Window

1. From the View Window, press F4 to Launch the application you are viewing.

   If the file has an extension of .EXE, .COM, or .BAT, the Open File dialog box appears.

2. Specify any parameters desired to run the application and choose **Open.**

   The application runs. When you exit from the application, the PC Tools Desktop Window appears.

Using Quick File View

This feature displays the selected file in a maximized (zoomed) window.

Using Quick View with Windows Displayed

1. Select the files to be viewed in the File List.

   If you don't select files, the highlighted file is the one you can view.

2. Choose **Quick View** from the File menu.

   The first file selected in the File List appears in a full screen-sized View window.

3. When you have finished viewing files, press Esc or click **Exit** on the message bar to return to where you were in PC Tools Desktop before opening the View window.

Using Quick View with Windows Hidden

1. Press Alt or click where the title bar should be to display the horizontal menu bar.
2. Choose **Quick View** from the File menu.
3. Type the path and file name of the file you want to view, then press Enter.
4. Choose **OK.**

   The first selected file appears.

Changing the Viewer Configuration

You can display the View window horizontally or vertically on the screen. The current configuration setting is indicated to the right of the Viewer Config command on its menu.

- Choose **Display Options ➤ Split Horizontal** from the Configure menu.

Copying Files

You can use Copy to copy a single file or a group of files from one drive to another, to the same drive with new file names, or to a different directory on the same drive.

- Use the drag-and-drop method to copy one or more files to another location.
- Use the single-list display to copy one or more files on the same drive from one directory to another.
- Use the dual-list display to copy one or more files to a different drive or from one File List to another.

You can also copy files when the Tree and File Lists are hidden. If you select more files to copy than will fit on one disk, PC Tools Desktop prompts for another formatted disk.

Copying Files with Drag and Drop

1. Select the file or group of files you want to copy.
2. Point to one of the selected files, then hold down the mouse button. (If several files have been selected, they will all be moved.)
3. Drag and drop the file or files to the location you want to move them to.

   You can drop the files on another directory or on a drive icon. If you use the dual-list display, you can copy the files from a directory on one drive to a specific directory on another drive. You can also drop files on function keys defined to perform tasks. For example, you can define a function key as Print and drop files on that key to print them. See "Defining Function Keys" in the *Configuring PC Tools Desktop* chapter in this part.

NOTE *When copying files with the mouse, the directory you are moving from and the directory you are moving to must be visible in the Tree List. You cannot scroll a Tree List with the mouse while you are dragging the files to be copied.*

Copying Files Using a Single-List Display

1. Press Tab to activate the Tree List, then select the drive and directory containing the files you want to copy *from*.
2. Press Tab to activate the File List, then select the files you want to copy.
3. Choose **Copy** from the File menu.

4. Select the target drive and choose **OK**.

   If the target drive contains directories, they are displayed in the Tree List and a dialog box asks you to select the directory where the files are to be copied.

5. Select the directory to copy the files *to* in the Tree List.

If you are copying the files to a directory that does not already contain files with those names, PC Tools Desktop copies the files to the new location. A dialog box displays the files being copied and the path of the new location. After copying, the main PC Tools Desktop screen appears.

If you are copying the files to a directory that contains files with the same names, you'll be asked to provide new names for those files. For more information, see "Responding to a Dialog Box," later in this chapter.

Copying Files Using a Dual-List Display

1. Press Ins to open a second set of windows.
2. Press Tab to activate one of the Tree Lists, then select the drive and directory containing the files you want to copy *to*.

   The selected drive and directory combination is called the *target directory*.

3. Press Tab twice to activate the second Tree List, then select the drive and directory you want to copy the files *from*.

   This selected drive and directory combination is called the *source directory*.

4. Press Tab to activate the source directory's File List, then select the files you want to copy.
5. Choose **Copy** from the File menu.

   A dialog asks you to confirm the target directory.

6. Choose **OK**.

   If the second window display is not the one you want to copy the selected files to, choose **No** and follow the instructions in the dialog boxes to select a different target directory.

If you are copying the files to a directory that does not already contain files with those names, PC Tools Desktop copies the files to the new location. A dialog box displays the files being copied and the path of the new location. After copying, you return to the main PC Tools Desktop screen.

If you are copying the files to a directory that contains files with the same names, you'll be asked to provide new names for those files. For more information, see "Responding to a Dialog Box" later in this chapter.

Copying Files with Windows Hidden

1. Press Alt or click where the title bar should be to display the horizontal menu bar.
2. Choose **Copy** from the File menu.
3. Type the path and name of the file you want to copy in the Copy File(s) text box, then press Enter.
4. Type the path and name for the file's destination in the To text box, then press Enter.
5. Choose **OK**.

Responding to a Dialog Box

- If the selected file names already exist in the target directory, choose one of these options in the Copy dialog box:

  Replace All: Replaces all files in the target directory that have the same names as the selected files.

  Replace File: Replaces the file in the target directory that has the same name as the selected file.

  Skip File: Skips to the next file. No action is taken on the current file.

  Skip All: Copies only the files whose names do not already exist in the target directory.

- If you are copying files into the same directory on the same drive, enter the new file name and extension in the Copy dialog box. Then choose **OK**.
- If the files will not fit on the selected target drive, insert another formatted disk when prompted and choose **OK**.

Moving Files

You can move a single file or a group of files. The Move command is just like Copy, except that it automatically deletes the source files from the original drive or directory after the copy is successful. You can move files from one drive to another or to a different directory on the same drive.

- Use the single-list display to move files on the same drive from one directory to another.
- Use the dual-list display to move files to a different drive or from one File List to another.

You can also move files when the Tree and File Lists are hidden.

Moving Files Using the Keyboard

In this procedure, words in parentheses apply to the dual-list display only.

1. To use the dual-list display, press Ins to display a second set of windows.
2. Press Tab to activate the (first) Tree List, then select the drive and directory containing the files you want to move.
3. Press Tab to activate the (first) File List, then select the files you want to move.
4. If you are using the dual-list display, press Tab to activate the second Tree List, then select the drive and directory you want to move the files *to*.
5. Choose **Move** from the File menu.

   PC Tools Desktop warns you that Move will delete the source files after the copy has been completed.
6. Choose **OK**.

   ▶ If using the single-list display, go to step 8.

   or

   ▶ If using the dual-list display, go to step 7.
7. When PC Tools Desktop asks if the second window display is the one you want to move the selected files to, choose **OK**.

   PC Tools Desktop moves the files to the new target location, deleting the original source files. On completion, PC Tools Desktop displays the main screen.

   ▶ If the second window display is not the one you want to copy the selected files to, choose **No** and go to the next step.

   ▶ If the selected file names exist in the target directory, go to step 10.
8. Select the target drive by pressing a drive letter when a dialog box prompts you, then choose **OK**.

   If the target drive contains directories, they are displayed in the Tree List. A message asks you to select the directory to move the files to.
9. Select the directory to move the files *to* from the (second) Tree List.

   PC Tools Desktop moves the files to the new target location, deleting the original source files. After the move, the main PC Tools Desktop screen appears.

10. If the selected file names already exist in the target directory, choose one of these options in the Move dialog box:

    Replace All: Replaces all files in the target directory that have the same names as the selected files.

    Replace File: Replaces the file in the target directory that has the same name as the selected file.

    Skip File: Skips to the next file. No action is taken on the current file.

    Skip All: Moves only the files whose names do not already exist in the target directory.

NOTE *If you attempt to move files to the same directory they are already in, the File Move dialog box displays the message "Cannot move file to same path." Choose* ***Cancel*** *to return to the main PC Tools Desktop screen.*

Moving Files Using Drag and Drop

PC Tools Desktop allows you to move files by dragging the selected files from one directory or drive to another with the mouse. In the following procedure, words in parentheses apply to the dual-list display only.

NOTE *When moving files with the mouse, the directory you are moving from and the directory you are moving to must be visible in the Tree List. You cannot scroll a Tree List with the mouse while you are dragging the files to be moved.*

1. Select the file or files you want to move.
2. Press and hold the Ctrl key and point to one of the selected files, then hold down the mouse button. (If several files have been selected, they will all be moved.)
3. Drag and drop the file or files to the location you want to move them to.

   You can drop the files on another directory or on a drive icon. If you use the dual-list display, you can move the files from a directory on one drive to a specific directory on another drive.

NOTE *If you attempt to move files to the same directory they are already in, the File Move dialog box displays the message "Cannot move file to same path." Choose* ***Cancel*** *to return to the main PC Tools Desktop screen.*

4. If the selected file names already exist in the target directory, choose one of these options in the Move dialog box:

   Replace All: Replaces all files in the target directory that have the same names as the selected files.

   Replace File: Replaces the file in the target directory that has the same name as the selected file.

   Skip File: Skips to the next file. No action is taken on the current file.

   Skip All: Moves only the files whose names do not already exist in the target directory.

Moving Files with Windows Hidden

1. Press Alt or click where the title bar should be to display the horizontal menu bar.
2. Choose **Move** from the File menu.
3. Type the path and name of the file you want to move in the Move File(s) text box, then press Enter.
4. Type the path and name for the file's destination in the To text box, then press Enter.
5. Choose **OK**.

Comparing Files

The Compare File function compares two separate files to see if they're identical. It can also compare several pairs of files at once. The files can have matching or different file names, can be on the same disk or different disks, or can be in the same directory with different file names.

1. Select the files to compare.
   - If you are using the single-list display, you will select the files to be compared with later in this procedure. Proceed to step 2.

     or

   - If you are using the dual-list display, select the files in the second File List that you want the first files to be compared with. Then proceed to step 2.
2. Choose **Compare** from the File menu.

   If you are using the dual-list display, proceed to step 4.

3. In the File Compare dialog box, select the drive that contains the files to be compared, then choose **OK**.
4. In the second File Compare dialog box, choose **Matching** to compare files with the same name or **Different** to compare files with different names.
   - If you are using the single-list display and the selected drive contains directories, they are displayed in the Tree List and a dialog box asks you to select a directory.

     or

   - If you are using the dual-list display, PC Tools Desktop asks if the second window contains the files you want to compare.
5. If you are using the single-list display, select the directory that contains the files you want to compare in the Tree List.

   or

   If using the dual-list display, choose **OK**.

   If you chose **Matching**, the File Compare dialog box appears and the files are compared. If the files differ, the File Compare dialog box notifies you. The dialog box also shows which sector and offset (the position in the sector) where the difference was found. The ASCII value of each difference is displayed, too. Proceed to step 8.

   If you chose **Different**, the File Compare dialog box prompts you to enter the name of the file to be compared. Proceed to step 6.
6. Type the name and extension of the file to be compared, then choose **OK**.
7. When the File Compare dialog box tells you the name of the first file to be compared, choose **Compare**.

   A dialog box notifies you of the compare results. It also shows the sector and offset (the position in the sector) where any differences were found. The ASCII value of each difference appears, too.
8. Choose **OK** after each difference is noted in the dialog box to step through the compare process for all differences.

   If you selected more than one file, each is processed in turn. After all files are processed, you return to the main PC Tools Desktop screen.

You can also compare files using the Compare command on the Disk menu and the Compare Window command on the Tools menu.

Comparing Files with Windows Hidden

1. Press Alt or click where the title bar should be to display the horizontal menu bar.
2. Choose **Compare** from the File menu.
3. Type the path and name of the file you want to compare in the Compare File(s) text box, then press Enter.
4. Type the path and name of the second file you want to compare in the To text box, then press Enter.
5. Choose **OK**.

Renaming Files

The Rename command changes the name of a single file or multiple files.

Renaming a Single File

1. Select the file you want to rename.
2. Choose **Rename** from the File menu.
3. Type the new file name and extension in the File Rename dialog box.
4. Choose **Rename**.

   The file is renamed and the window where you invoked Rename appears.

Renaming Multiple Files

1. Select the files you want to rename.
2. Choose **Rename** from the File menu.

   A dialog box allows you to change file names and extensions individually or globally.
3. To rename all the selected files with the same name or extension, choose **Global**.

   or

   To rename files one by one, proceed to step 5.

   For example, if you have selected all your word-processing documents and they have the extension .TXT, you can change that extension to .DOC for all the files.

4. Type the name and extension you want to change to in the dialog box, then choose **Rename.**

   If you are renaming all .TXT files to .DOC, you would enter * in the Name field and DOC in the Ext field.

5. To rename the selected files individually, choose **Single**.

6. Type the name and extension you want to change in the File Rename dialog box, then choose **Rename.**

   Choosing **Next File** displays the next selected, file without renaming the current one.

Renaming Files with Windows Hidden

1. Press Alt or click where the title bar should be to display the horizontal menu bar.
2. Choose **Rename** from the File menu.
3. Type the path and name of the file you want to rename in the Rename File(s) text box, then press Enter.
4. Type the path and new file name in the To text box, then press Enter.
5. Choose **OK**.

Deleting Files

You can delete a single file or a group of files at once, even if the files are marked with read-only, system, and hidden attributes. See "Changing File Attributes" later in this chapter and "Turning Confirmation Messages On and Off" in the *Configuring PC Tools Desktop* chapter in this part for more information.

NOTE *Deleting system files could cause your hard drive not to boot. If you switch on the Confirm Delete System Files option, you'll be warned about any system files you try to delete.*

Deleting a File

1. Select the files you want to delete.
2. Choose **Delete** from the File menu.

   The File Delete dialog box appears with the name of the first file selected.

3. Choose one of the command buttons.

   Delete: Deletes the file listed.

   Next File: Skips this file and displays the next file (displayed only if more than one file is selected).

   Delete All: Deletes all files selected, without individual confirmation (displayed only if more than one file is selected).

Deleting Files with Windows Hidden

1. Press Alt or click where the title bar should be to display the horizontal menu bar.
2. Choose **Delete** from the File menu.
3. Type the path and name of the file you want to delete in the Delete File(s) text box.
4. Choose **OK**.

Wiping Files

The Wipe File command calls the Wipe utility, which protects the confidentiality of deleted data by erasing it completely from a hard or floppy disk. After a file or disk is wiped thoroughly, it can no longer be recovered or read by any means (including Central Point Undelete).

Use Wipe to:

- Delete groups of files instead of wiping them completely off the disk. Unlike the Delete command for files, Wipe can delete all directories and files in an entire branch of the Tree List at once.
- Specify files to be deleted or wiped by file name or attribute (for example, you can wipe or delete modified files, hidden files, or read-only files).
- Clear deleted data from unused areas on a disk, or from the unused portion of the space occupied by a file. This prevents confidential data that has been deleted already from being found in unused disk space.

To wipe files:

1. Select the files you want to clear from the File List.
2. Choose **Change ➤ Wipe** from the File menu.

   The Wipe screen appears. For instructions on using Wipe, see *Part 3 Data Recovery and System Utilities* in this volume or press F1 for online help.

Undeleting Files

Undelete allows you to recover files that have been deleted. You can use Undelete to perform any of the following tasks:

- Automatically recover all of a file that you accidentally deleted. To ensure full recovery, you must use Undelete immediately after deleting the file, before any of the file's data is overwritten.
- Manually recover file clusters (sections) if parts of the deleted file have been overwritten by other data.
- Recover data that no longer has a file name in the directory.
- Recover files to the same drive they were deleted from or to a different drive.
- View deleted files to verify that a file is actually the one you want to recover.
- Locate files you want to undelete by file name or file content.
- Use search groups to find certain types of deleted files, like dBASE files.
- Use filters to search for files by attribute, date deleted, and size range.

To open the Undelete program:

▶ Choose **Undelete** from the Tools menu.

The Undelete window appears.

See *Part 3 Data Recovery and System Utilities* in this volume for information about the Undelete window, finding deleted files, strategies for protecting and recovering files, and error messages.

Searching for Text in Files

You can search for either an ASCII or hex character string in all files in the window, selected files in the window, or unselected files in the window. The window can be a File List or a Located Files window. You can also select what to do after a file is found with the matching text.

1. Select the files you want to search.

   Each file is searched in the order chosen.

2. Choose **Search Files** from the File menu.

   ▶ To search for ASCII text, proceed to step 3.

   or

   To search for hex characters, skip to step 4.

3. Enter a string of ASCII characters to search for in the Text Search dialog box. Then skip to step 5.

   You can enter up to 32 characters, it doesn't matter whether you enter uppercase or lowercase letters.

4. To enter hexadecimal values, select the **Hex** command button, then type the hex values you want to search for.

   You can enter up to 32 characters. The hex search is case-sensitive. If you enter invalid hex values, PC Tools Desktop notifies you with a beep. The corresponding ASCII values are displayed below the hex line.

5. Select one of the Search options to specify which files to search.

   See "Text Search Dialog Box," following.

   If you do not want to change this option, proceed to step 6.

6. Select one of the If Found options to specify what PC Tools Desktop should do when the search text is found.

   See "Text Search Dialog Box," following.

   If you do not want to change this option, proceed to step 7.

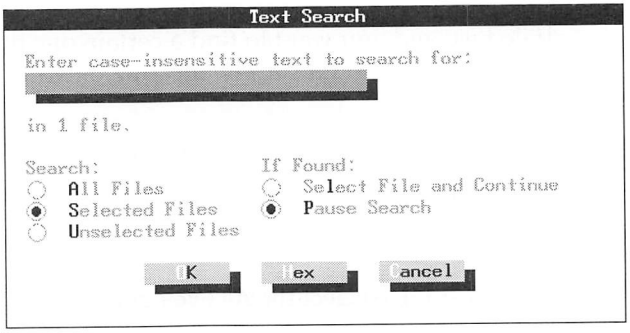
7. Choose **OK** to start the search.

   If you selected **Pause Search**, the search pauses after a file containing the search text is found, and displays new command buttons that allow you to edit this file or continue to the next file. Proceed to step 8.

8. Choose one of the command buttons (described in "Text Search Dialog Box," following).

   When PC Tools Desktop finishes the search, it displays the window you were in when you chose Search Text.

Text Search Dialog Box



Search Option	What it Does
All Files	Searches all the files in the current directory for the matching text.
Selected Files	Searches only the selected files for matching text.
Unselected Files	Searches the unselected files for matching text.

If Found Option	What it Does
Select File and Continue	Selects files that contain the search text and then continues the search. After the search, you return to the window where you started, and the files that contain the search text are selected.
Pause Search	Pauses after a file is found that matches the text.

Command Button	What it Does
OK	Starts searching.
Hex	Changes the dialog box to search for hex values.
ASCII	Changes the dialog box to search for ASCII text.
Select	Selects the file when the search has been completed on all files.
Next File	Continues the search on the next file.
Edit	Allows you to use the hex editor on the file. The Sector Edit screen appears with the cursor on the first byte of the matching string. See "Using the PC Tools Hex Editor" in the *Using Editors* chapter in this part for information on editing sectors.

Example: Finding all Files in the List that Contain "Tom"

If all the letters you have written regarding a particular project are listed in the File List, and you want to find a certain one that you sent to Mr. Tom Williams, you could start by locating only the letters that contain the name Tom.

1. Press Alt F to select the File menu, then press H.
2. In the Search File dialog box, type `Tom`.
3. Press Tab.
4. Press A to select the **All Files** option.
5. Press Tab.

6. Press L to select the **Select File and Continue** option.
7. Press Tab.
8. Press Enter.

or

1. Choose **Search Files** from the File menu.
2. In the Search File dialog box, type `Tom`.
3. Click **All Files**.
4. Click **Select File and Continue**.
5. Click **OK**.

Printing Files

The Print command prints the contents of one or more files to LPT1. Instructions for printing a File List are given in the next section. To print the Tree List, see the *Managing Directories* chapter in this part.

1. Select the files to print.
2. Choose **Print ➤ Print File** from the File menu.
3. Select a print option for the file listed in the File Print dialog box.

   Print as a Standard Text File: Prints a standard ASCII character text file.

   Print File Using PC Tools Desktop Print Options: Lets you define the page layout for printing and then prints a standard text file.

   Dump Each Sector in ASCII and Hex: Prints sectors in both ASCII and hexadecimal format.
4. Choose **Print** to print the file.
   - If you selected **Print File Using PC Tools Desktop Print Options**, the File Print dialog box appears for you to select options. Skip to the next procedure.
   - If you selected more than one file to print, the dialog box appears again with the next file name. Repeat steps 3 and 4 to print the next file.
   - To skip the current file and display the next selected file name in the dialog box, choose **Next**.

Printing Using the Print Options

When you select **Print File Using PC Tools Desktop Print Options** from the File Print dialog box, a new File Print dialog box appears.

1. Select a print formatting option to change.

   Each option is described in "Options for Print Formatting," in the following section.

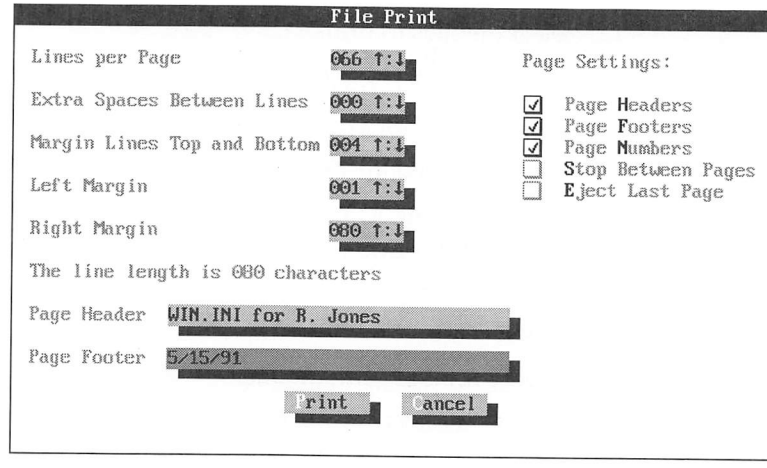
2. Enter a new value for the option.

   Repeat steps 1 and 2 until you have specified new values for all the options you need to change.

3. Choose **Print**.

   PC Tools Desktop prints the file. If you selected more than one file to print, the previous dialog box displays the next file name.

Options for Print Formatting



These options are listed in the File Print dialog box when you select **Print File Using PC Tools Desktop Print Options**:

Lines per Page: Specifies the number of lines on a page.

Extra Spaces Between Lines: Specifies the number of blank lines to leave between each printed line.

Margin Lines Top and Bottom: Specifies the number of lines for top and bottom margins.

Left Margin: Specifies the first print position of a line.

Right Margin: Specifies the last print position of a line.

Page Header: Contains the text that appears as page header, if the Page Header page setting is on.

Page Footer: Contains the text that appears as a page footer, if the Page Footer page setting is on.

Page Settings: The following five options affect printed page appearance.

Page Headers: Turns page headers on or off. When off, text in the Page Header field does not appear on the printed page.

Page Footers: Turns page headers on or off. When off, text in the Page Header field does not appear on the printed pages.

Page Numbers: Numbers each page.

Stop Between Pages: Allows you to print single sheets. You are prompted to insert the form you want to print on in the printer.

Eject Last Page: Specifies whether to eject the last page printed.

Printing Files with Windows Hidden

1. Press Alt or click where the title bar should be to display the horizontal menu bar.
2. Choose **Print ➤ Print File** from the File menu.
3. Type the path and name of the file you want to print in the Print File(s) text box, then press Enter.
4. Choose **OK**.

Printing a File List

The Print File List command prints the name, size, number of disk clusters, date, time, and attributes for each file in the selected directory.

1. Select the directory you want to print the File List for.
2. Choose **Print ➤ Print Directory** from the File menu.

   PC Tools Desktop prints the list of file names in the current directory, then displays the main PC Tools Desktop screen.

NOTE *If you have used the File Display Options or File List Filter to modify the contents of the File List, these modifications do not affect your printed File List.*

Verifying Files

The Verify command reads all the sectors in a file to ensure that the entire file can be read without any errors. Verify can read a single file or group of files.

1. Select the files you want to verify.
2. Choose **Information ➤ Verify** from the File menu.

   The File Verify dialog appears, and reads sectors that contain the highlighted file, or selected files. If there are no errors, the File Verify dialog box tells you that the file is OK. If you selected more than one file to verify, the next file is then verified.
3. If an error is found, choose **View/Edit** to repair the sector, or choose **Verify** to continue verifying files without repairing the sector.

   To edit or repair the sector, follow the instructions given in "Using the PC Tools Desktop Hex Editor" in the *Using Editors* chapter in this part.

Verifying Files with Windows Hidden

1. Press Alt or click where the title bar should be to display the horizontal menu bar.
2. Choose **Information ➤ Verify** from the File menu.
3. Type the path and name of the file you want to verify in the Verify File(s) text box, then press Enter.
4. Choose **OK**.

Changing File Attributes

Attribute Change allows you to change the attributes, date, and time of the selected files.

WARNING You should not change the attributes of copy-protected files or system files. Changing these attributes can result in applications not running or your hard disk not booting.

1. Select the files whose attributes or date and time you want to change.
2. Choose **Change ➤ Attribute** from the File menu.

   PC Tools Desktop displays the File Attribute dialog box. The information presented in this box is described in "File Attribute Dialog Box," later in this chapter.

3. Move to the File Listing you want to change.
4. To change the attribute of a file, click the attribute letter displayed on the screen or press the key with the attribute letter (A, H, S, or R) to toggle the attribute on or off.
5. To change the date or time, move to the field you want to change and type the new date or time.

   Dates must be entered as two digits; for example, September would be entered as 09.
6. Choose **Update** to save the changes to disk.

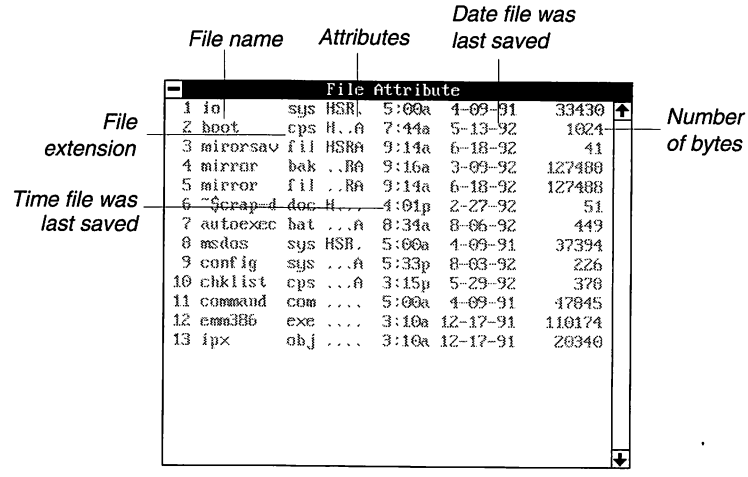
TIP *To quickly change an attribute for each file in a list, press the new attribute key and then press* ↓ *to go to the next file. Repeat these keystrokes until each file has been changed.*

Changing File Attributes with Windows Hidden

1. Press Alt or click where the title bar should be to display the horizontal menu bar.
2. Choose **Change ➤ Attribute** from the File menu.
3. Type the path and name of the file you want to change attributes for, then press Enter.
4. Choose **OK**.

TIP *You can change the attributes of a group of files in a directory by selecting the group of files first.*

File Attribute Dialog Box


File name
Attributes
Date file was last saved
File extension
Time file was last saved
Number of bytes
File Attribute
1 io sys HSR 5:00a 4-09-91 33430
2 boot cps H..A 7:44a 5-13-92 1024
3 mirorsav fil HSRA 9:14a 6-18-92 41
4 mirror bak ..RA 9:16a 3-09-92 127488
5 mirror fil ..RA 9:14a 6-18-92 127488
6 ~$crap~4 doc H... 4:01p 2-27-92 51
7 autoexec bat ...A 8:34a 8-06-92 449
8 msdos sys HSR. 5:00a 4-09-91 37394
9 config sys ...A 5:33p 8-03-92 226
10 chklist cps ...A 3:15p 5-29-92 378
11 command com 5:00a 4-09-91 47845
12 emm386 exe 3:10a 12-17-91 110174
13 ipx obj 3:10a 12-17-91 20340

The following attributes can be displayed:

(H) Hidden: The file is "invisible" and is not listed when you enter the DOS Dir command. PC Tools Desktop displays hidden files unless the Hide System Files option is turned on in the Confirmation Options dialog box. See "Turning Confirmation Messages On and Off" in the *Configuring PC Tools Desktop* chapter in this part for information on setting this option.

(S) System: The system file is "invisible" and is not listed when you enter the DOS Dir command.

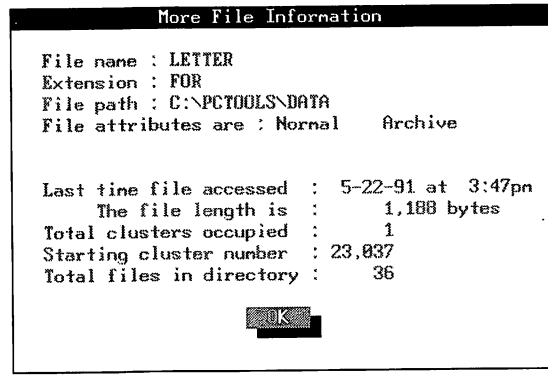
(R) Read Only: You can only read the file; you may not make any changes to the file. (At the beginner user level, you cannot delete the file either.) This protects the file from accidental or unauthorized changes.

(A) Archive: The archive bit is set, meaning the file has changed and should be backed up during the next backup session. This bit is used by the DOS Backup command and Central Point Backup to determine which files to back up. Whenever you make a change to a file, DOS sets its archive bit.

Getting File Information

Show Information gives you specific information about a selected file.

1. Select the files you want information about.
2. Choose **Information ➤ File Info** from the File menu.


More File Information
File name : LETTER
Extension : FOR
File path : C:\PCTOOLS\DATA
File attributes are : Normal Archive
Last time file accessed : 5-22-91 at 3:47pm
The file length is : 1,188 bytes
Total clusters occupied : 1
Starting cluster number : 23,837
Total files in directory : 36
OK

3. Choose **OK** to return to PC Tools Desktop or **Next File** to display information about the next selected file.

Getting File Information with Windows Hidden

1. Press Alt or click where the title bar should be to display the horizontal menu bar.
2. Choose **Information ➤ File Info** from the File menu.
3. Type the path and name of the file that you want more information about, then press Enter.
4. Choose **OK**.

Securing Files with PC Secure

PC Secure protects your proprietary data and applications by encrypting, compressing, and hiding sensitive files on your disk. File encryption "scrambles" a file so that the data in it cannot be read until it is decrypted (unscrambled).

With PC Secure you can

- Encrypt and decrypt files with password keys, which are words or numbers that you enter when PC Secure prompts you for them.

- Thoroughly protect your sensitive data. PC Secure's encryption system randomizes the data, which cannot be decrypted without the password key. The key cannot be determined even if you know some of the text.

WARNING Operated incorrectly, PC Secure changes from a data security application to the electronic equivalent of a paper shredder. Losing your password can cause irretrievable loss of your data. Before you use PC Secure, please familiarize yourself with the PC Secure operating procedures and strategic information provided in *Part 3 Data Recovery and System Utilities* in this volume.

NOTE *If you are using a non-USA version of PC Secure, see the* PC Secure *chapter in* Part 3 Data Recovery and System Utilities *in this volume. Because of US federal regulations, PC Secure is shipped out of the USA with a different encryption system, and the USA and non-USA versions of PC Secure are not compatible.*

See the *PC Secure* chapter in *Part 3 Data Recovery and System Utilities* in this volume for information about

- The types of files that can be encrypted.
- Complete descriptions of PC Secure procedures, options, and strategies.
- Suggestions for selecting and managing keys and passwords.
- Error messages.

Encrypting a File

When you encrypt a file, you protect it by electronically "scrambling" its contents. Encrypted files are locked and unlocked with keys, which are words or numbers that you choose.

When first installed, PC Secure has the following options selected:

- Quick Encryption method (two rounds of randomization)
- Compress files while they are being encrypted
- One password key for all the files in a given session
- Do not delete the original file

Before you encrypt a file, you might want to change the encryption options. See "Configuring PC Secure Options," in the *Configuring PC Tools Desktop* chapter in this part.

1. Select the files you want to encrypt from the File List.
2. Choose **Secure ➤ Encrypt** from the File menu.

   The PC Secure screen appears.

3. If this is the first time you have used PC Secure, enter a master key.

   If you are not familiar with the function of the master key and how to select one, please see *Part 3 Data Recovery and System Utilities* in this volume for information.

4. Type a password for this file when you are prompted, and press Enter.

5. Type the same password again to verify it, then press Enter.

   The PC Secure screen displays the options you have selected, information about the file being encrypted, and the progress of the encryption procedure.

6. Choose **OK** after encryption is complete.

   You return to the PC Tools Desktop screen.

For instructions on encrypting an entire directory at once, see the *PC Secure* chapter in *Part 3 Data Recovery and System Utilities* in this volume.

Encrypted files are stored in normal DOS format and can be copied, backed up and restored, and transmitted using a modem. For instructions on transferring encrypted files from one computer to another, see the *PC Secure* chapter in *Part 3 Data Recovery and System Utilities* in this volume.

Decrypting a File

To "unscramble" a previously encrypted file, you decrypt it. This restores the file to its original condition.

1. Select the files you want to decrypt from the File List.

2. Choose **Secure ➤ Decrypt** from the File menu.

   The PC Secure screen appears.

3. Type the same password you used to encrypt this file when you are prompted and press Enter.

4. Type the password again if you are prompted, then press Enter.

   PC Secure checks your password key to see if it matches. If there is any problem, a message box tells you what it is and lets you try again.

If	Then
The password is bad	Choose **OK** and try again.
The keys are not equal	Choose **OK** and verify the password again.
The file is not a PC Secure file	Choose **OK** and select another one. (This message means the file you selected is not encrypted.)
You choose the **No Delete** option	Both the original and an encrypted copy will be in the same directory. In that case, you may get this message: `That file already exists. Replace?` See the *PC Secure* chapter in *Part 3 Data Recovery and System Utilities* in this volume for more information.

5. If the original file has not been changed since it was encrypted, choose **OK** to overwrite it.

WARNING If the original file has been changed, choose **Cancel**, then either rename or move the original file, and decrypt the file again. Do not choose **OK** or the decrypted copy will write over the original file and all changes will be lost.

   While PC Secure decrypts the file, it shows you its progress.

6. When the decryption is finished, choose **OK**.

7. Repeat steps 2 through 6 to decrypt another file, if you want.

See *Part 3 Data Recovery and System Utilities* in this volume for instructions on decrypting a directory.

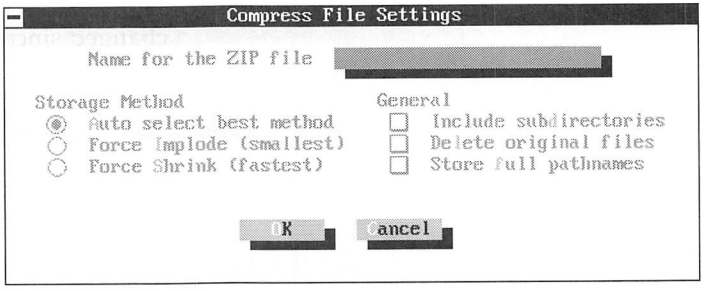
Compressing and Decompressing Files

You can compress (or zip) files so they occupy less disk space, then decompress (or unzip) them to their original size when you want to use them. Compressing files is also useful when you want to send a group of files to someone else. Compressed files transmit more quickly on bulletin board or electronic mail services and occupy less space on floppy disks.

When you compress files, they are compressed into a PKZIP-compatible file. You can compress one or more files into a single zip file. When you decompress a compressed file, you can extract all the files at once or just some of the files.

Compressing a File or Group of Files

1. Select the file or files you want to compress.
2. Choose **Compression ➤ Zip files** from the File menu.



3. Select the options you want and choose **OK**.

   Name for the ZIP file: Insert the name of the file you want to contain the compressed files. When you compress a file, it does not have to use a ZIP extension in its file name. It can have any name.

   Storage Methods:

   Auto select best method: Automatically selects the best method for compressing, either Force Implode or Force Shrink.

   Force Implode (smallest): Forces the file to be imploded, even if there is little savings imploding the file, such as when you compress a binary file.

   Force Shrink (fastest): Forces the file to be shrunk, even if there is little savings in shrinking the file.

General Options:

Include subdirectories: Includes files in subdirectories below the current directory.

Delete original files: Deletes the original files that were compressed.

Store full pathnames: Stores full path names of the compressed files, so that when you decompress them, they return to their original locations.

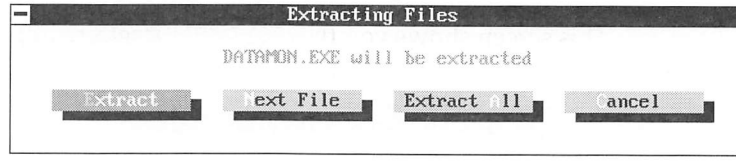
Decompressing a Compressed File

1. Select the file or files you want to decompress.

   When you compress a file, it does not have to use a ZIP extension in its file name. It can have any name.

2. Choose **Compression ➤ Unzip files** from the File menu.

   If the compressed file contains more than one file, the Extracting Files dialog box appears. This lets you select which files to decompress.



3. Choose a command.

   When files are extracted from a compressed file, the compressed file remains on the disk until you delete it.

   Extract: Extracts the file whose name is shown at the top of the box.

   Next File: Extracts the next file and ignores the file whose name is shown at the top of the box.

   Extract All: Extracts all files in the compressed file.

   Cancel: Cancels the decompressing.

   or

▶ Double-click the file you want to unpack.

A prompt appears for each file that can be extracted, asking if you want to extract the file.

Mapping Files

File Map shows you which clusters are allocated to specific files.

1. Select the files you want to map.

   If you don't select any files, PC Tools Desktop assumes you want to map all the files contained in the current directory.

2. Choose **Maps ➤ File Map** from the Tools menu.

   The File Map displays the location of the first selected file.

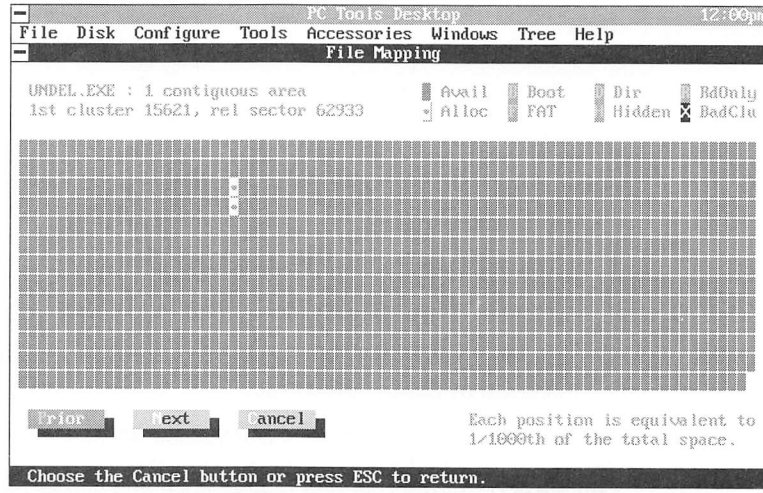
3. Choose **Next** to display the location of the next file or **Prior** to display the location of the previous file.

NOTE *When mapping a file, if you see that the clusters are fragmented (stored in random sectors on the disk) you can use Compress to unfragment your hard disk. Compress optimizes your disk performance and makes file undeletion as reliable as possible. See* Part 3 Data Recovery and System Utilities *in this volume for instructions on using Compress.*

The File Mapping Screen

This screen shows you the location of a selected file on your disk. Each position in the grid represents one cluster. DOS always allocates disk space for files one cluster at a time. Clusters can be different sizes, depending on the disk. On single-sided floppy disks, one cluster equals one sector. On double-sided disks, one cluster equals two sectors. On hard disks, clusters can be 4, 8, or more sectors long. Regardless of the size of a cluster for any given disk, DOS always sets aside disk space by clusters, not sectors.

For floppy disks with 40 tracks per side, PC Tools Desktop shows the corresponding track numbers above the grid (such as track 0, 5, 10, 15, and so on). If you're mapping a single-sided disk, the actual sector numbers are also shown on the left. Otherwise, the clusters are shown in a large grid, without track numbers (since different disks use tracks and sectors in different ways).



Each space in the grid contains one of the following symbols, showing what that cluster is used for:

[] **Available:** Cluster is not being used and is available for file storage.

B **Boot Record:** Contains the boot record. Every disk contains a boot record, even if it is not capable of booting DOS. Displayed only for 360/720K floppy disks.

F **File Alloc Table:** Holds part of the File Allocation Table (FAT), which keeps track of where files are stored on the disk and which clusters are available. Displayed only for 360/720K floppy disks.

D **Directory:** Cluster is part of the disk's directory. Displays only for 360/720K floppy disks.

[•] **Allocated:** Cluster is part of the selected file.

h **Hidden:** Cluster is part of a hidden file. Displayed only for 360/720K floppy disks.

r **Read Only:** Cluster is part of a read-only file. Displayed only for 360/720K floppy disks.

[x] **Bad Cluster:** Cluster is marked as bad and is unusable.

NOTE *These symbols may look different than those on your screen.*

Using Editors

Using PC Tools Desktop, you can access file and disk editors. You can edit files in hexadecimal (hex) format or in text format. PC Tools Desktop even lets you choose to use its built-in text editor, the Notepads editor in Desktop, or any other external text editor.

You can also edit disk information, using the PC Tools Desktop built-in disk editor, the PC Tools DiskEdit program, or any other external disk editor.

Here's what you'll find in this chapter:

- **Using the PC Tools Desktop Hex Editor** explains how to configure and load the PC Tools Desktop hex editor to view and edit file contents in hexadecimal code.
- **Using the PC Tools Desktop File Editor** explains how to use the PC Tools Desktop internal file editor to view and edit file contents in ASCII code.
- **Using the PC Tools Desktop Disk Editor** explains how to use the PC Tools Desktop internal disk editor to make changes to sectors on a disk.

To configure the default text or disk editor, see "Configuring Default Editors" in the *Configuring PC Tools Desktop* chapter in this part.

For more information on Notepads, see the *Notepads* chapter in *Part 4 Desktop Accessories* in Volume 2. For more information on the DiskEdit program, see the *DiskEdit* chapter *Part 3 Data Recovery and System Utilities* in this volume.

Using the PC Tools Desktop Hex Editor

You use the hex editor to edit binary files, such as those with .BIN, .OBJ, .CFG, .COM, and .EXE extensions. You can also use the hex editor to change data in the damaged sector of a file that PC Tools Desktop can't verify. You should have a good technical understanding of hexadecimal values, sector bytes, ASCII values, and how they control your computer before you start changing files at this level. See the *DiskEdit* chapter in *Part 3 Data Recovery and System Utilities* in this volume for more information on data structures.

Starting the Hex Editor

1. Select the file(s) you want to edit.
2. Choose **Change ➤ Hex Edit** from the File menu.

   The File Edit screen displays the first selected file. See "File Edit and Sector Edit Screens," later in this chapter for a description of this screen and the commands listed on the message bar.

When you have found the sector of the file that you want to edit in the File Edit screen, you can change the contents of the sector or repair a bad sector.

Editing a Sector

1. In the File Edit screen, choose **Edit** from the message bar or press F7.

   The cursor appears on the first byte of the sector and the screen title changes to Sector Edit.

2. Position the cursor over the first byte you want to change.

   The cursor is positioned in the hex portion of the screen so that you can type in new hexadecimal values. If you prefer to make changes to the ASCII values, press F8 or click **ASC/hx**. The cursor moves to the ASCII portion of the screen.

3. Type the new values.

   They replace the original bytes at the cursor position and appear in color or highlighted. The corresponding values in the other portion of the screen also change. In other words, when you type new hexadecimal value for a byte, the new ASCII value for that byte is highlighted in the ASCII portion of the screen.

4. Choose **Save** or press F5 to write the changes to the disk.

   The File Edit screen appears.

Repairing a Bad Sector

1. From the File Edit screen, choose **Edit** or press F7.

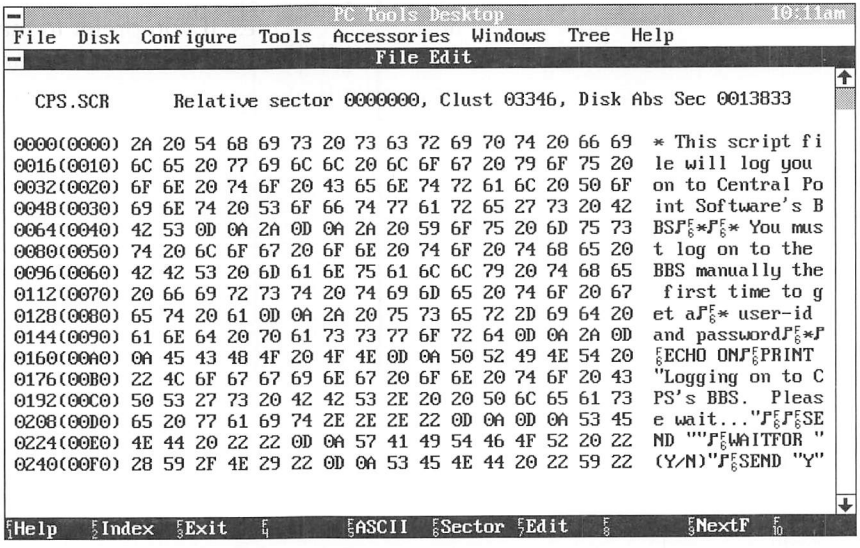
   PC Tools Desktop rereads the information in the sector and re-interprets it.

2. Choose **Save** or press F5 to rewrite the same sector information, without the error, back to the disk.

This procedure makes the sector readable. Unfortunately, some of the information contained in the newly rewritten sector may still be invalid. When the data is corrupted, complete data recovery is unlikely, but this recovers as much of the data as possible.

File Edit and Sector Edit Screens

The File Edit screen appears when you choose **Hex Edit**. The file name, relative sector number, system area or cluster number, and disk absolute sector number appear at the top of the window.



Each file consists of sectors that contain 512 bytes. The Hex Edit screen displays 256 bytes (half a sector) on the screen at a time.

NOTE *If you use a VGA monitor, you can view an entire sector by setting the Screen Size to 50 lines. See "Configuring Display Options" in the* Configuring PC Tools Desktop *chapter in this part for more information.*

The numbers in the left column are the "offset" or "displacement" numbers of a sector in the file. The bytes of each sector are numbered from 0 to 511 (0000 to 01FF in hexadecimal). The first line shows the first 16 bytes, 0–15. The next line shows the next 16 bytes, 16–31, and so on. The displacement number in the left column indicates how many bytes into the sector each line is (such as 0000, 0016, 0032, and so on). The numbers in parentheses are the same offset numbers in hexadecimal.

The middle column displays 16 bytes of the sector in each line. Each byte appears as two-digit hexadecimal numbers. The same 16 bytes are displayed in ASCII values in the right column. Some or all of the ASCII values may appear unreadable. This is because those bytes may be program or data values and were not intended to be displayed as text.

When you choose **Edit**, the title of the screen changes to *Sector Edit* and a cursor appears in the first byte of the sector so that you can make changes.

You can move around the edit screens using the following keys:

Function Key	Description
Home	Displays the beginning of the file.
End	Displays the end of the file.
Pg Up	Moves the display several lines backward in the file.
Pg Dn	Moves the display several lines forward in the file.

File Edit and Sector Edit Function Keys

While the File Edit and Sector Edit screens are displayed, special function keys are listed on the message bar.

File Edit Screen

Function Key	Description
F1 Help	Displays an online help panel with information about the command or feature you are using.
F2 Index	Displays an index of topics that you can request online help for.
F3 Exit	Exits from PC Tools Desktop.
F5 ASCII	Toggles between the ASCII and hex portions of the screen.
F6 Sector	Lets you change to a different relative sector in the file. Enter a new sector number in the dialog box, then choose **OK**.
F7 Edit	Displays the Sector Edit screen so that you can edit information in the sector.
F9 NextF	Displays the next selected file.

Sector Edit Screen

Function Key	Description
F1 Help	Displays an online help panel with information about the command or feature you are using.
F2 Index	Displays an index of topics that you can request online help for.
F3 Exit	Exits from PC Tools Desktop.
F5 Save	Saves the changes you have made to the sector.
F8 ASC/hx	Toggles between the ASCII and hex portions of the screen.

Using the PC Tools Desktop File Editor

PC Tools Desktop's file editor lets you create and edit text files quickly and easily. Basic editing commands are available to add, delete, copy, paste (insert), search, and replace text. You can also create files in PC Tools Desktop and then use the Notepads program in Desktop Accessories to perform more complex editing functions at a later time.

Only a limited section of the file being edited is kept in memory at one time—the rest is stored in a "spill file" on the disk. This means that you can use PC Tools Desktop's file editor to edit very large files, without allocating extra memory to PC Tools Desktop—the only limit is the amount of available space on your hard disk.

Starting the File Editor

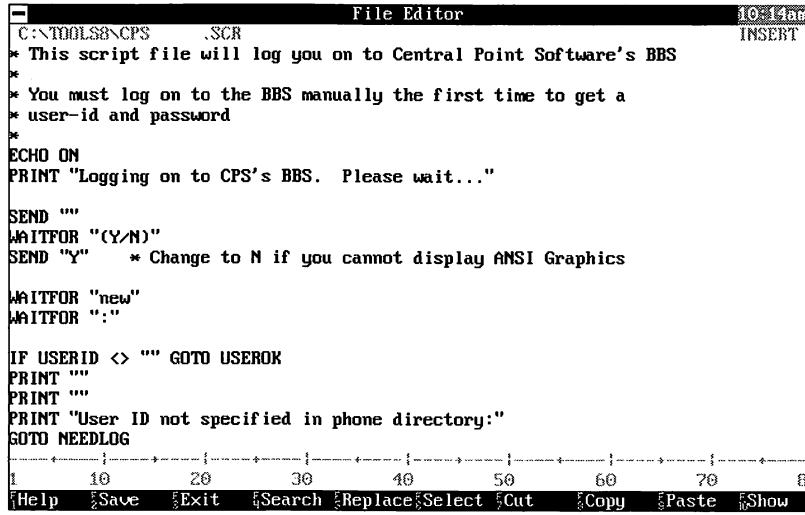
1. Select the file you want to edit.

   To create a new file, skip this step and start with step 2.

2. Choose **Change ➤ Edit** from the File menu.

   A dialog box asks whether you want to edit the selected file or create a new one.

3. Choose **Edit** to edit the selected file or **Create** to create a file.


File Editor
10:14am
C:\TOOLS8\CPS .SCR
INSERT
* This script file will log you on to Central Point Software's BBS
*
* You must log on to the BBS manually the first time to get a
* user-id and password
*
ECHO ON
PRINT "Logging on to CPS's BBS. Please wait..."
SEND ""
WAITFOR "(Y/N)"
SEND "Y" * Change to N if you cannot display ANSI Graphics
WAITFOR "new"
WAITFOR ":"
IF USERID <> "" GOTO USEROK
PRINT ""
PRINT ""
PRINT "User ID not specified in phone directory:"
GOTO NEEDLOG
1 10 20 30 40 50 60 70 80
F1Help F2Save F3Exit F4Search F5Replace F6Select F7Cut F8Copy F9Paste F10Show

Editing Using the Keyboard or Mouse

You can use a mouse to position your cursor by pointing and clicking as explained in *Part 1 Getting Started* in this volume. You can also use the special key functions in the following table to move around in and edit a file.

To	Press
Insert a character at the cursor	A character key
Insert a space at the cursor	Spacebar
Insert a tab at the cursor	Tab
Insert a paragraph at the cursor	Enter
Delete a character under the cursor	Del
Delete a character to the left of the cursor	Backspace
Move the cursor one character up, down, left, or right	↑ ↓ ← →
Move to the beginning of the line	Home
Move to the end of the line	End
Move to the beginning of the file	Ctrl Home
Move to the end of the file	Ctrl End
Move to the beginning of a window	Home twice
Move to the end of a window	End twice
Scroll text up one window	Pg Up
Scroll text down one window	Pg Dn

Choosing Editing Commands

The bottom line of the File Editor screen lists file editor commands, described later in this chapter, that you can choose in several ways.

- Click the command with the mouse.

or

- Press the function key assigned to the command.

  For example, press F2 to save changes to the current file.

or

1. Press Alt to display highlighted letters in the file editor commands on the bottom line.

2. While holding down Alt, press the highlighted letter of the command you want to use.

   The command is not performed until you release Alt.

Adding and Editing Text

- Position the cursor where you want to insert text and type.

  To type over existing text, first press Ins to turn off insert mode. The file editor comes up in insert mode automatically, and pressing Ins toggles between insert and overtype mode.

When you reach the end of a line, the file editor wraps words to the next line automatically. The only time you need to press Enter is to end a paragraph.

Tabs are preset in the file editor to every eighth position across the screen.

Selecting a Block of Text

Before copying, cutting, or deleting text, you must select the text you want to perform the function on.

1. Position the cursor on the first character of the block you want to select.
2. Choose **Select** or press F6.
3. Move the cursor to the end of the block you want to select.

   As you move the cursor, the selected text is highlighted. You can then copy, cut, or delete the text you have selected.

NOTE *To unselect text that is selected, choose* ***Select*** *again to exit from Select mode.*

Copying Selected Text

- Choose **Copy**.

  A copy of the selected text is placed in a special part of memory; you can then paste it elsewhere in the document. The selected text remains at its original location in the file. Choosing this command also exits from select mode.

Cutting Selected Text

- Choose **Cut**.

The selected text is deleted from the file and placed in a special part of memory; you can then paste it elsewhere in the document. Choosing this command also exits from select mode.

Pasting Text into a File

Text that you have copied or cut is stored in a special area of memory called the *paste buffer*. The contents of this buffer can then be pasted into the document file.

NOTE *The paste buffer holds only the last cut or copied text. To move two different sections of your document, you must move one section at a time. Choosing* ***Cut*** *or* ***Copy*** *replaces any existing text in the paste buffer with the new cut or copied text.*

1. Position the cursor at the location where you want to paste text.
2. Choose **Paste**.

   The first character of the pasted text is placed at the cursor position.

Searching for Text

1. Choose **Search**.
2. Enter the text you want to search for in the dialog box, then choose **OK**.

   The file editor searches the file from the cursor position forward, and stops with the cursor positioned at the start of the first occurrence of the search text. The file editor does not distinguish between uppercase and lowercase text when searching.
3. Choose **Repeat** to find the next occurrence of the search text.

   Press Esc to cancel the search.

Searching for and Replacing Text

1. Choose **Replace**.
2. Enter the text you want to search for in the Search String text box.

   If you have just used the Search command to find a text string, that text appears in the text box. You can enter different text if you want. The file editor does not distinguish between uppercase and lowercase text when searching, but it *does* when replacing.
3. Enter the text you want to replace it with in the Replace String text box, then choose **OK**.

The file editor searches the file from the cursor position forward, finds the first occurrence of the search text, and replaces it with the replacement text. The cursor is positioned at the beginning of the replaced text.

NOTE *The file editor* does *differentiate between uppercase and lowercase in replacement text.*

4. Choose **Replace** again to replace the next occurrence of the search text with the replacement text.

   Press Esc to cancel the search.

Showing Carriage Returns

- Choose **Show** to see where carriage returns are in your text.

Saving Your Changes

- Choose **Save** to save any changes you have made to the current file.

Exiting the File Editor

1. Press Esc or click the close box.
2. Choose **Save** to save the changes you have made before leaving the file editor.

   To continue editing the file, choose **Return**, or choose **Exit** to leave the file editor, without saving changes.

Every time you save your changes, PC Tools Desktop renames the previously saved version of your file with the .BAK extension. You can undo a set of changes simply by editing your old file.

Printing Your File

1. Exit from the file editor.

   Be sure to save any changes that you want to keep.
2. Select the file you want to print in the File List.
3. Choose **Print ➤ Print File** from the File menu.

   For more information on formatted printing, see "Printing Files" in the *Managing Files* chapter in this part.

You can also use the Notepads program in PC Tools Desktop to print your files. See *Part 4 Desktop Accessories* in Volume 2 for instructions.

File Editor Function Keys

While the File Editor screen is displayed, these special function key commands are listed on the message bar:

Function Key	Description
F1 Help	Displays an online help panel with information about the command or feature you are using.
F2 Save	Saves the changes you have made to the document.
F3 Exit	Exits from PC Tools Desktop.
F4 Search	Opens the Search dialog box so you can specify text to find.
F5 Replace	Opens the Search & Replace dialog box so you can find and replace text.
F6 Select	Toggles Select mode on and off.
F7 Cut	Deletes the selected text and places it in the paste buffer.
F8 Copy	Places a copy of the selected text in the paste buffer.
F9 Paste	Inserts the last text that was cut or copied into the file at the cursor location.
F10 Show	Shows where carriage returns are located in the file.

Using the PC Tools Desktop Disk Editor

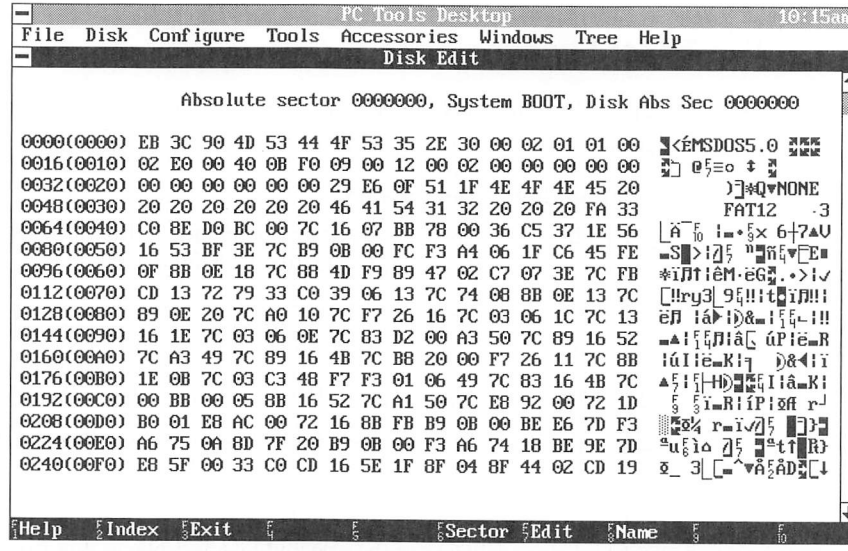
PC Tools Desktop contains an internal disk-editing program that lets you perform basic disk-editing tasks. If you want to do more than the PC Tools Desktop disk editor allows, you can configure PC Tools Desktop to load the PC Tools DiskEdit application or a third-party disk editor instead of the internal PC Tools Desktop disk editor.

WARNING Do not change any data while working in the DiskEdit program. You may damage your hard disk and be unable to reboot. For more information, see the *DiskEdit* chapter in *Part 3 Data Recovery and System Utilities* in this volume.

If no one has changed the configuration of the Disk Editor command on the Disk menu, it will load the disk editor built into PC Tools Desktop. To use this editor:

1. Select the drive you want to view or edit.
2. Choose **Disk Editor** from the Disk menu.

   The PC Tools Desktop Disk Edit screen appears.



NOTE *If your screen does not look like this, check the disk editor configuration using the Configure Editors command on the Configure menu. See "Configuring Default Editors" in the* Configuring PC Tools Desktop *chapter in this part for more information.*

The following three tables describe the cursor keys you can use to move around the PC Tools Desktop Disk Edit screen, the function keys you can use to edit the disk, and various parts of the disk you can move to directly.

Special Key	What it Does
Home	Moves to the first sector of the disk.
End	Moves to the last sector of the disk.
Pg Up	Moves the display to the previous half-sector.
Pg Dn	Moves the display to the next half-sector.

Disk Edit Function Key	What it Does
F6 Sector	Displays a dialog box with the six "move to" selections described below.
F7 Edit	Allows you to make changes to a sector (described in "Editing a Sector" earlier in this chapter).
F8 Name	Displays the name of the file to which the sector belongs.

When you choose F6 Sector, these are the available options:

"Move To" Selection	What it Does
Boot Sector	Moves to the first byte of the disk's boot record.
First FAT Sector	Moves to the first byte of the File Allocation Table.
First ROOT DIR Sector	Moves to the first byte of the root directory.
First DATA Sector	Moves to the first byte of the first data sector.
Change Cluster #	Allows you to enter the number of the cluster to move to.
Change Sector #	Allows you to enter the number of the sector to move to.

Managing Directories

PC Tools Desktop lets you manage directories easily. You can hide and display subdirectories, add, delete, and rename directories, and prune and graft directories.

Here's what you'll find in this chapter:

- **Customizing Your Tree List Display** explains how you can customize your tree display list to show or hide directories.
- **Sorting Directories** explains how you sort directory names to display them by name, extension, size, date/time, or the order in which they have been selected.
- **Directory Maintenance** explains how you maintain directories on a routine basis, with tasks such as adding, deleting, and renaming directories.
- **Rereading the Directory Tree** explains how you reread the directory tree so you can update it after making changes to the directory structure.

Customizing Your Tree List Display

You can control the way PC Tools Desktop displays directories in the Tree List when you first load PC Tools Desktop, using commands on Configure and Tree menus.

Showing the Next Level in a Directory Branch

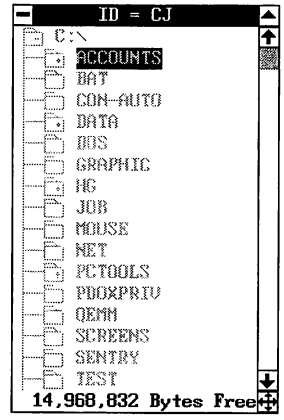
1. Select the directory to expand.
2. Choose **Expand One Level** from the Tree menu or press ⊞ on the numeric keypad.

   The next level of directories nested beneath the selected directory appears.

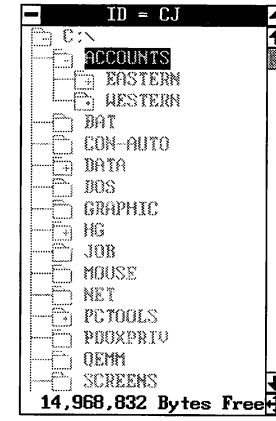
   or

- Click the + sign displayed in the folder icon next to the directory you want to expand.

  The next level of directories nested beneath the selected directory appears, and the + sign changes to a – sign.



Before Expanding

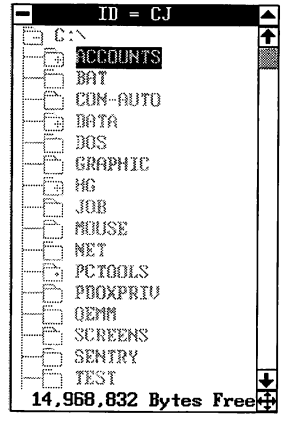


After Expanding

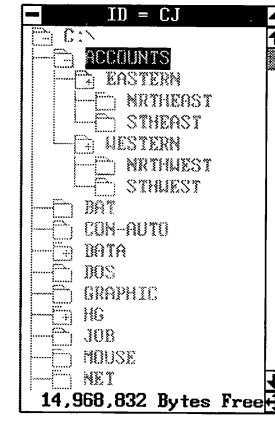
Showing All Levels in a Branch

1. Select the directory that you want to expand.
2. Choose **Expand Branch** from the Tree menu or press [*] on the numeric keypad.

   All directories nested beneath the selected directory appear.



Before Expanding

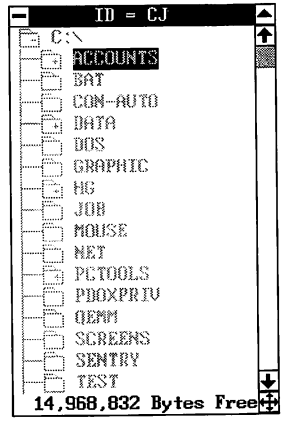


After Expanding

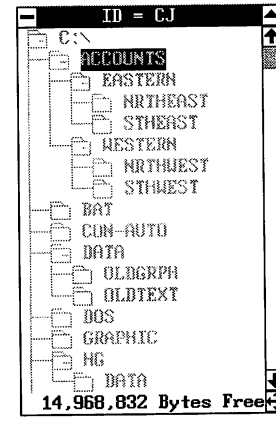
Showing All the Directories on a Drive

1. Select any directory.
2. Choose **Expand All** from the Tree menu.

   All the directories on the selected drive appear.



Before Expanding



After Expanding

Hiding All the Directories in a Branch

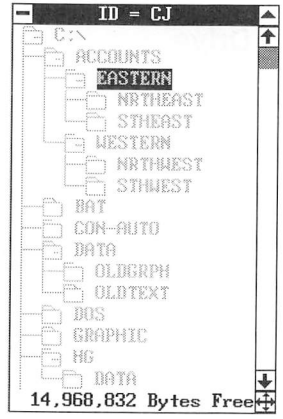
1. Select the directory that you want to collapse.
2. Choose **Collapse** from the Tree menu or press ⊟ on the numeric keypad.

   All the directories nested beneath the selected directory are hidden.

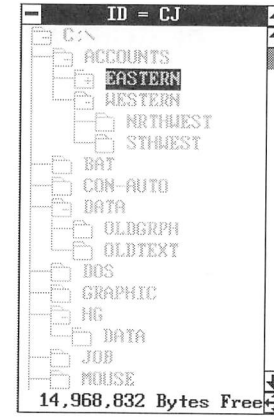
   or

- Click the minus sign to the left of the directory that you want to expand.

  All the directories nested beneath the selected directory are hidden, and the minus sign changes to a plus sign.



Before Collapsing



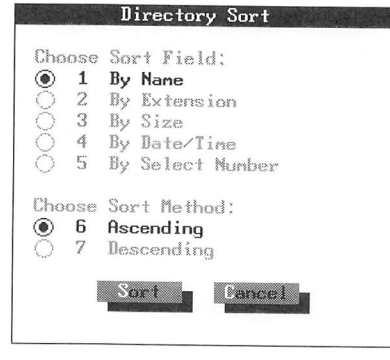
After Collapsing

Sorting Directories

The Sort Files in Directory command allows you to sort the files in a selected directory. You can also sort the root-level directories by sorting the root directory.

1. Select the directory you want to sort.
2. Choose **Sort Directory** from the Disk menu.
3. Select one of the sort fields in the Directory Sort dialog box.

   You can display the files according to name, extension, size, date and time, or the order in which they have been selected, by pressing the number of the option you want to select.



4. Select a sorting method.

   The files can be listed in ascending or descending order. Ascending order is A to Z, smallest to largest, or least recent to most recent; descending is the reverse.

5. Choose **Sort**.

   A dialog box appears, giving you several options:

   View: Lets you view the directory structure as it existed before the sort. Use this if you want to see how the directories are currently structured before changing their sort order. Press any key to return to the Directory Sort dialog box.

   Update: Updates the directory list by re-reading the drive information. When complete, the directory list appears with the new sort order.

   Cancel: Cancels the sort and the main PC Tools Desktop window appears.

   Resort: Displays the sort options so you can change the settings.

Directory Maintenance

Maintaining directories is so important, and PC Tools Desktop provides two ways for doing it. The Disk menu lets you perform the most frequently used commands while working in PC Tools Desktop. You can also access the full Directory Maintenance program so you can perform more complicated procedures.

You can use these commands to do any of the following tasks:

- Add a directory.
- Rename a directory.
- Delete a directory.
- Prune and graft (or move) a directory.
- Modify directory attributes.
- Remove a directory and all its contents. This is called *expunging* a directory.
- Call the Directory Maintenance program, gaining access to a complete array of directory management functions.

In addition to these menu commands, you can copy directories using drag and drop.

NOTE *The Directory Maintenance commands in PC Tools Desktop's Disk menu cannot be used on network drives. However, you can use the stand-alone Directory Maintenance program to manipulate network drives.*

Adding a Directory

1. Choose **Directory Maintenance ➤ Add Directory** from the Disk menu.
2. Select the directory to which you want to add another directory.
3. Type the new directory name and extension in the Directory Add dialog box, then choose **OK**.

   The new directory appears in the Tree List as a subdirectory of the selected directory.

Renaming a Directory

1. Choose **Directory Maintenance ➤ Rename Directory** from the Disk menu.
2. Select the directory you want to rename.
3. Type the new directory name and extension in the Directory Rename dialog box, then choose **OK**.

NOTE *You cannot rename the root directory.*

Deleting a Directory

1. Choose **Directory Maintenance ➤ Delete Directory** from the Disk menu.
2. Select the directory to which you want to add another directory.
3. Type the new directory name and extension in the Directory Add dialog box, then choose **OK**.

   The new directory appears in the Tree List as a subdirectory of the selected directory.

NOTE *You cannot delete a disk's root directory.*

Moving a Directory Using Prune and Graft

1. Choose **Directory Maintenance ➤ Prune and Graft** from the Disk menu.
2. Select the directory you want to move.
3. Choose **OK**.

   The directory is marked with a greater than symbol (>) in the Tree List.
4. Select where you want to move the directory.

The directory will be made a subdirectory of the selected directory.

5. Choose **OK** to confirm the move.

Moving a Directory Using Drag and Drop

PC Tools Desktop allows you to move directories by dragging the selected directory from one location to another with the mouse.

NOTE *When moving a directory with the mouse, the directory you are moving from and the directory you are moving to must be visible in the Tree List. You cannot scroll a Tree List with the mouse while you are dragging the files to be moved.*

1. Press and hold Ctrl and point to the directory you want to move, then hold down the mouse button.
2. Drag and drop the directory to the location you want to move it to.

   You can drop the directory on another directory or on a drive icon.

   The entire directory, including all its files and any subdirectories, is moved to the new location.

Modifying Directory Attributes

WARNING Changing the attributes of copy-protected directories or system directories can result in programs not running or your hard disk not booting.

1. Choose **Directory Maintenance ➤ Directory Attributes** from the Disk menu.
2. Select the directory whose attributes you want to modify.
3. Select the attribute(s) you want to apply to the directory.

   Hidden: Makes the directory "invisible" so that it is not listed when you use the DOS directory command. (You can see hidden directories using PC Tools Desktop in intermediate or advanced mode or using the Directory Maintenance program.) Hidden directories are not moved by some disk-optimizing programs, like Compress.

   System: Makes the directory "invisible" so that it is not listed when you use the DOS directory command. (You can see system directories, using the full Directory Maintenance program.) This attribute is not normally used.

   Read Only: May be used for copy-protection schemes.

   Archive: May be used for some copy-protection schemes.

4. Choose **Update** to confirm the changes.

Expunging Directories

Removing a DOS directory is usually a two-step process. You first must delete all the files in the directory, then delete the directory. PC Tools Desktop lets you bypass this two-step process by expunging directories with files. Expunging a directory deletes all files in the directory and then deletes the directory itself.

- Choose **Directory Maintenance ➤ Expunge Directory** from the Disk menu.

  All files in the selected directory are deleted and the directory itself is also deleted, PC Tools Desktop re-reads the new directory structure, and then displays it in the tree window.

NOTE *You can use Undelete to recover the files in an expunged directory. See the* Undelete *chapter in* Part 3 Data Recovery and System Utilities *in this volume for information on using Undelete.*

Copying a Directory

1. Point to the directory you want to copy, then hold down the mouse button.
2. Drag and drop the directory to the location you want to move it to.

   You can drop the directory on another directory or on a drive icon. You can also drop the directory on a function key to execute the defined function. The entire directory, including its files and any subdirectories, is duplicated in the new location.

   See "Defining Function Keys" in the *Configuring PC Tools Desktop* chapter in this part for information on configuring the function keys.

Calling the Full Directory Maintenance Program

- Choose **DM Program** from the Disk menu.

  The Directory Maintenance screen displays the Tree List for the current directory. See *Part 3 Data Recovery and System Utilities* in this volume for instructions on using this program, or press F1 for online help.

Rereading the Directory Tree

After PC Tools Desktop reads the contents of a drive, it saves a copy of the drive's directory tree. When you tell PC Tools Desktop to change drives, it looks for a tree file for that drive. If it finds one, it reads the tree from the file rather than from the drive itself. This saves you time, since it's quicker to read the file than it is to reread the tree each time.

To keep this information current, you should reread the tree after using the DOS command MD to create a new directory or RD to remove a directory. If you always use PC Tools Desktop's commands to make and remove directories, it's not necessary to reread the tree.

- Choose **Re-Read Tree** from the Disk menu.

  A message box lists the drive being read and the number of directories scanned as the drive is reread.

Managing Disks

The PC Tools Desktop Disk menu provides commands for managing disks, including getting information about your hard disk, making system disks, and working with disks.

Here's what you'll find in this chapter:

- **Renaming Volumes** explains how you rename disk volume names.
- **Searching Disks** explains how you search disks for specific text, even in deleted files.
- **Copying Disks** explains how you copy DOS-formatted floppy disks.
- **Comparing Disks** explains how to compare disks to make sure they contain the same information.
- **Changing Drives** explains how to change the current drive used by PC Tools Desktop.
- **Formatting Disks** explains how you format hard and floppy disks.
- **Getting Disk Information** explains how you view and understand disk information.

Renaming Volumes

A volume name is the name of a disk. You can rename a disk using the Disk menu or using the Directory Maintenance program.

1. Select the drive you want to rename from the drive line.
2. Choose **Rename Volume** from the Disk menu.
3. Enter the new volume label name in the Disk Rename dialog box and choose **Rename**.

Searching Disks

The Search Disk command scans the entire selected disk (including deleted files) for a string of up to 32 characters. When the string is found, you may view or edit it.

1. Choose **Search Disk** from the Disk menu.

   The Disk Search dialog box appears for you to type in the string you want to search for.

   ▶ To search for ASCII characters, proceed to step 2.

   or

   To search for hex values, skip to step 3.

2. To search for a string of ASCII characters, type the characters, then proceed to step 4.

   In this type of search, you can enter text in any combination of uppercase or lowercase letters.

3. To search for hex values, press F9 to select hex mode and type the string as hex values.

   In this type of search, uppercase and lowercase letters are taken literally. If you enter invalid hex values, PC Tools Desktop notifies you with a beep.

4. Choose **OK** to start the search.

   As PC Tools Desktop scans the disk, a progress indicator appears.

5. When PC Tools Desktop finds the matching bytes, choose an option from the Disk Search dialog box.

   OK: Continues searching the disk for matching bytes.

   Name: Displays a dialog box, showing the file name of the matching sector.

   Edit: Enters the hex editor. The Sector Edit screen appears with the cursor on the first byte of the matching string, allowing you to view or edit sectors. See "Using the PC Tools Desktop Hex Editor" in the *Using Editors* chapter in this part for information on editing a sector.

Copying Disks

This command copies standard DOS-formatted floppy disks. Copy formats the target disk as it copies so you do not need to preformat it. An exact copy is made of the disk, including the disk's serial number.

You can make one copy of the source disk or multiple copies. PC Tools Desktop remembers the entire contents of the source disk, eliminating the need to insert it more than once.

1. Choose **Copy Disk** from the Disk menu.
2. Select both the source drive and target drive.

NOTE *Both the source and target drives must be the same type and must be using the same kind of disk.*

3. Insert the source disk in the appropriate drive, then choose **OK**.

   The Disk Copy dialog box shows the status of the copy process.

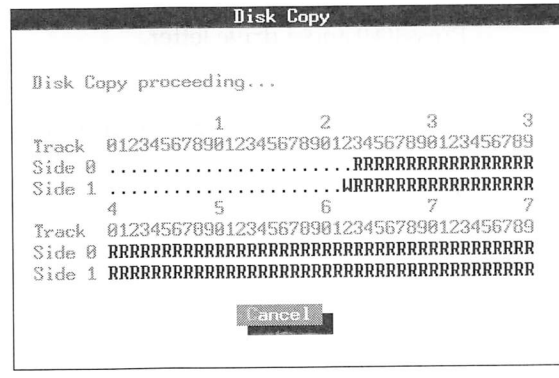
4. Insert the target disk if you are prompted to do so, then choose **OK**.

   The Disk Copy dialog box displays the following letters during the copy process. If a dot appears in the track status window, that track has been copied successfully.

   F: Formatting track

   R: Reading track

   W: Writing track



When the copy is complete, the Another Copy dialog box appears.

5. Choose **OK** and repeat step 4 to make an additional copy of the source disk.

   If you do not want an additional copy, choose **Cancel**.

Comparing Disks

You can compare two floppy disks to make sure they contain the same information.

1. Choose **Compare Disks** from the Disk menu.
2. Select the source drive to compare.

   This is the drive where the disk containing the information you want is inserted.
3. Select the target drive to compare.

   This is the drive where the second disk is inserted.

When the comparison is complete, PC Tools Desktop displays the Disk Compare dialog box, showing you the results of the compare operation.

Changing Drives

You can change the drive PC Tools Desktop uses several ways.

- Choose **Change Drive** from the Disk menu, select the new drive, and choose **OK**.

  or

  Press Ctrl and a drive letter.

  or

- Click the drive letter displayed at the top of the PC Tools Desktop window.

Formatting Disks

The Format Data Disk and Make System Disk commands call the PC Format program to format your disks. Formatting with PC Format ensures that hard and floppy disks of all densities can always be recovered by Unformat in case of an accidental FORMAT, ERASE *.*, or RECOVER *.*. (See the *Unformat* chapter in *Part 3 Data Recovery and System Utilities* in this volume.)

Formatting initializes each track of a disk so that your computer can recognize it as a DOS disk. Formatting also erases anything currently on a disk. You must format new disks before using them to store data.

1. If you are formatting a floppy disk, insert it in the drive.
2. Choose **Format** or **Make System Disk** from the Disk menu.

   A disk formatted as a system disk can be used to start your computer.

   The PC Format screen appears. See *Part 3 Data Recovery and System Utilities* for instructions on using PC Format, or press F1 for online help.

Floppy Disk Format Options

WARNING Use the proper type of disk for the format you choose. For example, formatting a 720K disk as 1.44MB may produce unpredictable results. Furthermore, a disk that has been incorrectly formatted may be unrecoverable using Unformat.

The following disk-format options are available for floppy disks.

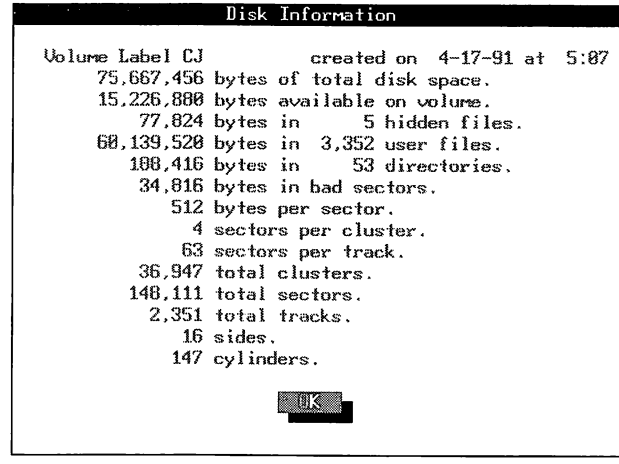
Size Option	Sides	Sectors per Track	Tracks
5.25-inch floppy disks:			
160K	1	8	40
180K	1	9	40
320K	2	8	40
360K	2	9	40
1.2M (high capacity)	2	15	80
3.5-inch floppy disks:			
720K	2	9	80
1.44M (high capacity)	2	18	80

The 1.2M and 1.44M options are usually available only on machines with 286-class and 386-class processors. In addition, the 1.44M option requires PC DOS Version 3.2 or higher or MS-DOS Version 3.3 or higher. DOS's DRIVER.SYS file may need to be installed in your CONFIG.SYS file for all formatting options to be present. See your DOS manual for more information on the installation and use of this file.

Getting Disk Information

Disk Information displays helpful information about a disk, such as the available disk space, number of hidden and user files, and the number of bytes in bad sectors.

1. Select the drive you want information for.
2. Choose **Disk Info** from the Disk menu.


Disk Information
Volume Label CJ created on 4-17-91 at 5:07
75,667,456 bytes of total disk space.
15,226,880 bytes available on volume.
77,824 bytes in 5 hidden files.
60,139,520 bytes in 3,352 user files.
188,416 bytes in 53 directories.
34,816 bytes in bad sectors.
512 bytes per sector.
4 sectors per cluster.
63 sectors per track.
36,947 total clusters.
148,111 total sectors.
2,351 total tracks.
16 sides.
147 cylinders.
OK

3. Choose **OK** to return to PC Tools Desktop.

PC Tools Desktop Command-Line Options

This chapter explains the command-line options available for PC Tools Desktop. You can select some of these options when you run Install. You can also add them to the command line when you start PC Tools Desktop from the DOS prompt or from your AUTOEXEC.BAT file.

See *Part 1 Getting Started* for help installing PC Tools Desktop. For additional command-line options that control the way PC Tools Desktop appears on the screen, see *Part 4 General Reference* in this volume.

Format

Use this format to run PC Tools Desktop, using command-line options:

```
PCTOOLS [d:] [options]
```

If you use the Drive option, it must be the first option and must be preceded by a space. The space is optional for all other options. You may use as many options as you want on the command line. Their order and case (upper or lower) are unimportant. Any invalid options are ignored.

NOTE *If you are accustomed to using PC Shell in previous versions of PC Tools, you can continue accessing the program by typing* `PCSHELL` *and using the same command-line options described in this chapter.*

Options

There are two types of options you can use with PC Tools Desktop: general options and load-resident options. General options apply to PC Tools Desktop, regardless of what mode you load it in (standard or resident). Load resident options apply only when you load PC Tools Desktop resident.

General Options

Use any of the following general options when you want to run PC Tools Desktop with a special configuration.

Option	Description
Drive:	Specifies a drive that you want PC Tools Desktop to read when it comes up. For example, `PCTOOLS B:` brings up PC Tools Desktop with drive B selected on the drive line.
/CF=*filename*	Specifies an alternate configuration file for PC Tools Desktop to call. The default file is PCSHELL.CFG.
/DQ	Disables the Quick Load option. When you open PC Tools Desktop with the hotkey, it must save the memory being used by the currently running program in a disk file before it can load its program file into memory. To make Shell load faster, it normally does not save memory when you use the hotkey to start PC Tools Desktop from the DOS prompt because there is no program running. Install PC Tools Desktop with the /DQ option if you experience any problems when you use the hotkey to start PC Tools Desktop from the DOS prompt.
/O*x*	Selects a different drive to contain the PC Tools Desktop overlay files—PCSHELL.OVL, PCSHELL.IMG, and PCSHELL.THM. (When running PC Tools Desktop resident, the image file PCSHELL.IMG is created and deleted in the same place as the other overlay files.) The PC Tools Desktop overlay files are always on disk, usually on the default drive. This option tells the program to build the files on another drive, such as a RAM disk. Building the overlay files on a RAM disk may help speed program execution. The RAM disk must have enough available space to hold the overlay files. The required space depends on the /R option, as shown in the table below. Also, the size of the PCSHELL.THM file depends on the type of display you are using. The size in this table reflects an EGA display—add about 20K if you are using a VGA display.

File Name	File Size in Bytes	
	/RT, /RS, /RM	/RL
PCSHELL.OVL	227,865	227,865
PCSHELL.IMG	475,136	0
PCSHELL.THM	478,256	13,056
Totals	1,181,257	240,921

NOTE *If you also have expanded memory, PC Tools Desktop automatically loads the PCSHELL.THM file to it, even if you have used the /O option.*

Option	Description
/?	This option displays a brief listing of help information on the screen about the various options you can use when loading PC Tools Desktop.
/VIDEO	This option displays information about 12 video and 4 mouse options you can use when loading PC Tools Desktop.

Video Option	What it Does
/25	Sets screen display to 25 lines. This is the default setting.
/28	Sets screen display to 28 lines (VGA only).
/43	Sets screen display to 43 lines (VGA & EGA only).
/50	Sets screen display to 50 lines (VGA only).
/IN	Runs program in color mode even it a color monitor is not automatically detected.
/BW	Sets display to black and white on a black-and-white monitor.
/LCD	Uses the LCD color scheme usually found on laptop computers.
/MONO	Uses IBM monochrome color scheme.
/FF	Speeds current display speed. This can cause snow or fuzziness on some monitors, particularly CGA.

Continued

Video Option	What it Does
/BF	Uses BIOS font. You should use this option if your graphics characters don't display properly.
/NF	Loads no fonts.
/BT	Allows graphics mouse in Windows. Allows graphic fonts with DESQview or UltraVision.

The four mouse options are:

Mouse Option	What it Does
/NGM	No graphics mouse. Uses default graphics mouse instead.
/LE	Exchanges the left-hand mouse buttons for the right-hand buttons. For left-handed users whose characters don't display properly.
/IM	Disables mouse.
/PS2	Resets mouse hardware in case your mouse pointer disappear or freezes.

Option	Description
/TR	Forces PC Tools Desktop to re-read the directory tree. If you have turned on PC Tools Desktop's Local Tree option, then changed the directory structure of a disk, this command forces PC Tools Desktop to re-read the tree and display its new configuration.
/Tdx	Tells PC Tools Desktop to ignore local directory trees after *x* number of days. Use this command to force a period re-reading of the directory tree when PC Tools Desktop's Local Tree option is turned on.

Continued

Option	Description
/ME*nn*	Specifies the amount of memory reserved for the program list. The format for this option is /ME*nn* where *nn* is a number from 4 to 60 that represents the amount of memory in Kbytes. The default is /ME16, which reserves 16K for the program list. You may want to increase this number if you have many program list entries that contain lengthy descriptions and text. However, reserving a large amount of memory for the program list could interfere with the Locate and View functions. When running PC Tools Desktop resident, the value specified with this option is the amount of resident memory reserved for the program list. This resident memory is also used by the Locate and View functions; therefore, specifying a large value for /ME affects the number of files you can locate and view. Some typical values are shown in the following table:

/ME Value	Number of Located Files	Whether You Can View the Files
25	100	No
25	80	Yes
16	150	No
16	100	Yes
4	200	Yes
4	150	Yes

If you use /ME60 and have large directories, you might not be able to run the viewer at all while running PC Tools Desktop resident.

To allow you to specify a larger /ME value when running PC Tools Desktop resident, you could increase the amount of resident memory allocated to PC Tools Desktop with the /A option. For example, specifying /A550 increases the available memory by 70K (from its default of 480K), providing additional memory for the program list and viewers.

/MENUFILE=*MENUFILE.MNC*	Specifies the menu file PC Tools Desktop uses. Substitute the name of the menu file for *MENUFILE.MNC*.

Load-Resident Options

Use any of the following load-resident options when you want to run PC Tools Desktop with a special configuration in resident mode.

Option	Description
/A	Determines the amount of memory PC Tools Desktop uses while it is active in resident mode (after you use the hotkey to start PC Tools Desktop). The format for this option is /A*nnn* where *nnn* is a number greater than 480K, which is the default setting. For example, to allocate 550K for PC Tools Desktop when it is active, use /A550. The only reason to increase the value of the /A option is to give more room to PC Tools Desktop when it is active. Use the default value unless you will be using PC Tools Desktop in resident mode and doing many single floppy disk operations. Increasing the memory PC Tools Desktop uses allows you to copy a disk on a single drive with fewer swaps. To change the value of /A, unload PC Tools Desktop from memory, then re-install it with the /A value you want. ***NOTE*** *If you use /RL with /A, the amount of resident memory used by PC Tools Desktop when it is not active will equal the /A setting.* ***TIP*** *If you receive the message "Insufficient Memory" while using PC Tools Desktop, exit from PC Tools Desktop and remove it from memory using the KILL command. Then re-install PC Tools Desktop using the /A option with a larger number. You can also add the /A option to PC Tools Desktop in your AUTOEXEC.BAT file.*
/F*n*	Changes the default hotkey from Ctrl Esc to Ctrl used with one of the function keys F1 through F10. (*n* is a number from 1 to 10.) This is useful if another program is already using the Ctrl Esc hotkey sequence. This option is only used in resident mode.

Continued

Option	Description
/R	Loads PC Tools Desktop memory-resident. Adding another letter to this option designates the amount of resident memory PC Tools Desktop uses when it is not active. Four options and two sizes are available:

Option	Amount of Resident Memory
/RT, /RS, /RM	10K
/RL	480K

Examples

Using Memory-Resident Options

You might want to change the /R option from its default setting to /RL to make PC Tools Desktop faster—both when using the hotkey to enter and exit from the program and when running other programs from PC Tools Desktop. The trade-off in using a small amount of memory is speed: less memory must be swapped out when /RL is used. PC Tools Desktop can achieve such small numbers because it contains a "virtual memory manager" that moves memory to disk when it is not needed. The speed of memory swapping depends on the speed of your hard drive. If you have a fast hard drive, /RT is recommended. If not, you may want to use /RL.

The advantage of memory swapping is that you can free almost all of PC Tools Desktop's memory for other programs; the disadvantage is that there is a slight delay when using the hotkey to enter and exit from the program or running programs from, PC Tools Desktop. PC Tools Desktop provides these settings so that you can pick the option that works best on your computer to optimize response time and use memory most efficiently.

NOTE *If you have EMS (expanded) memory, PC Tools Desktop uses it instead of your hard disk for storing its temporary files. You can use the /RT option and have the best of both worlds: speed and maximum conventional memory.*

Loading a Specific Menu from the DOS Command Line

- From DOS, type

  PCTOOLS /MENUFILE=*MENUFILE.MNC* Enter

  or

  PCMENU /MENUFILE=*MENUFILE.MNC* Enter

  where *MENUFILE.MNC* is the name of the menu file you want to load.

  For example, to load the menu file for PC Shell version 7.1, from DOS, type

  PCTOOLS /MENUFILE=VERSION7.MNC Enter

  or

  PCMENU /MENUFILE=VERSION7.MNC Enter

The Menu Editor Configuration File

The Menu Editor configuration file, MENUED.CFG, contains the location of the default menu file used by PC Tools Desktop. You can edit the MENUED.CFG file to specify the menu file used when you start PC Tools Desktop.

- Using a text editor, open the MENUED.CFG file, and edit the line

  MenuFile=C:\PCTOOLS*MENUFILE.MNC*

  substituting the name of the menu file you want to use for *MENUFILE.MNC*.

  For example, to load the menu file for PC Shell version 7.1:

  - Using an editor such as Notepads, open MENUED.CFG, and edit the menu file command line so it looks like this:

    MenuFile=C:\PCTOOLS\VERSION7.MNC

PC Tools Desktop Technical Information

Running on a Network

You can install PC Tools Desktop in a write-protected directory on a Novell NetWare (Version 2.12 or higher) or IBM PC LAN server. You can then run it from any workstation on the network that has access to the files on the server.

You (or your network supervisor) need to make sure that the PC Tools server directory is in your path. In addition, you need to set the PCTOOLS environment variable specifying where PC Tools should put all user-specific files (like PCTOOLS.CFG). This directory must be different for each user and the user must have write privileges. The PCTOOLS environment variable can be added to the workstation's AUTOEXEC.BAT file or done at the supervisor level on the network. If it is in the workstation's AUTOEXEC.BAT file, it should look like this:

```
SET PCTOOLS=drive:\directory_path
```

where *drive* is the drive letter and *directory path* is the full path where PC Tools should place its user-specific files.

NOTE *Do not insert spaces on either side of the equal sign (=).*

When PC Tools Desktop is used on a network, the networked drives that can be accessed appear with your local drives on the drive line, under the horizontal menu bar.

You can use all PC Tools Desktop commands on networked drives *except* these:

- Rename Volume
- Directory Sort
- Disk Information
- Disk Map
- File Map
- Directory Maintenance options
- Search Disk
- Verify Disk
- View/Edit Disk
- Format Data Disk
- Make System Disk

NOTE *The Directory Maintenance commands in PC Tools Desktop's Disk menu can not be used on network drives. However, you can use the stand-alone Directory Maintenance program to manipulate network drives.*

Network Supervisors

If you are setting up PC Tools Desktop on a Novell NetWare network, you should make the PC Tools directory path available to all users, and use a system login script to define the PCTOOLS environment variable for all users. For example,

```
SET PCTOOLS="H:\\HOME\\%LOGIN_NAME"
```

In this example, the directory below HOME has the same name as a user's login name and the user has full write privileges.

NOTE *Do not insert spaces on either side of the equal sign (=).*

You can use the Install program to install the PC Tools programs in a write-protected directory on a Novell NetWare or IBM PC LAN network server. They can then be run from any workstation on the network that has access to the files on the server. When installing to a network, Install does not make any modifications to an AUTOEXEC.BAT file or install any applications, other than adding the PC Tools programs to the program list.

You can make applications available to users by adding them to the program list (see the *Managing Applications* chapter in this part). When you do, the current directory must be set to the one PC Tools Desktop was installed in on the network. This ensures that the changes are reflected in the files that are run from the server.

If PC Tools is installed on a Novell NetWare server by a supervisor and the supervisor sets up the path and environment variable for all users, the workstation user does not need to run Install.

Tree Display on Networks

If you are connected to a Novell network and use PC Tools Desktop to look at the network server, it will display in the Tree List only directories that you at least have read privileges for. This makes PC Tools Desktop easy to use on a network because you see only directories you use instead of all the directories on the server.

Rereading the PC Tools Desktop Tree on Networks

PC Tools Desktop saves a copy of the directory tree for network drives in the file CPS*xxx*.TRE, where *xxx* is a code identifying the network server ID. When you tell PC Tools Desktop to change drives, it looks for a tree file for that server; if it finds one, it reads the tree from the file rather than from the drive itself. This makes PC Tools Desktop faster when switching drives on networks.

If you have resorted the directory or used DOS commands to change the directory structure (for example, to create or remove directories), you must reread the tree (see "Rereading the Directory Tree" in the *Managing Directories* chapter). When you use PC Tools Desktop commands to create, remove, and move directories, it is not necessary to reread the tree.

Preparing an Application to Accept Drag-and-Drop Files

Any application that can accept a list of files can be designed to work with the PC Tools Desktop drag and drop feature. Three conditions must be met before an application can accept files using drag and drop:

- The keyword <listfile> must be included in either the Commands or Keystrokes text box in the Program Item Information dialog.
- The application must be able to be informed of the file CPBLDLST.CPS. A command-line option may be necessary to accomplish this. For example, to tell the application PKZIP about the CPBLDLST.CPS file, the command-line option @ must be added before the <listfile> keyword.
- The application must be able to read the ASCII file CPBLDLST.CPS.

The keyword <listfile> passes the complete path of the CPBLDLST.CPS file to the application. Normally, the CPBLDLST.CPS file is created in the PCTOOLS\DATA subdirectory, so the <listfile> keyword passes the following path to the application:

```
C:\PCTOOLS\DATA|CPBLDLST.CPS
```

The CPBLDLST.CPS file is created when a file or group of files is dragged and dropped onto the application name in the Menu Window. This file contains a fully qualified path for each of the selected files. Each line is delimited by a carriage return (CR) and line feed (LF). The file ends with a carriage return and line feed (CR LF) and a control-Z (CTRL-Z).

For example, a CPBLDLST.CPS file can look like this:

```
C:\PCTOOLS\README.TXT <CR> <LF>
C:\PCTOOLS\MENUED.CFG <CR> <LF>
C:\PCTOOLS\SAMPLE.TXT <CR> <LF>
<CR> <LF>
<CTRL><Z>
```

Troubleshooting PC Tools Desktop

Problems with TSRs

If a problem arises after installing a new memory-resident program or a terminate-and-stay-resident program (TSR), or when using a TSR with a new application, there may be a conflict. See the guidelines in the *Memory-Resident Programs* chapter in *Part 4 General Reference* in this volume to help you track down and resolve problems involving TSRs.

Problems with PC Tools Desktop

If you encounter problems in PC Tools Desktop that do not cause an error message to display, check to see if a solution for the problem is given here before you call technical support.

Exiting from PC Tools Desktop blanks the screen.

If you have a different version of ANSI.SYS (like GANSI.SYS or VEGAANSI.SYS), try using that instead of your regular ANSI.SYS.

Exiting from PC Tools Desktop causes characters in the underlying program to blink.

If an underlying application has blinking characters after you use the hotkey to exit from PC Tools Desktop, you can edit the PCTOOLS.CFG file to change the setting of the BLINK_ON_EXIT option. If this option is set to DISABLE, change it to ENABLE, or vice versa.

Help for Disk Error Messages

If you get a message from DOS or CHKDSK indicating that there is a problem with your disk, you can use PC Tools Desktop's Advice feature to find out which PC Tools program will fix the problem.

- Choose **DOS Advice** from the Help menu.

  The main Advice screen appears. You can then find the problem you need information for, and Advice will tell you which PC Tools program you can use to fix it.

You can also access Advice from the program list. See *Part 1 Getting Started* in this volume for instructions.

PC Tools Desktop Error Messages

PC Tools Desktop displays messages to tell you when an error has occurred. These messages are explained below in alphabetical order. Please check this list to see if a solution for the problem you are experiencing is given here before you call for technical support.

Access Denied.

This message indicates that the disk you are copying to is full, the file exists in the directory but is marked "read-only," or the maximum number of files in the root directory has been reached.

Bad address mark or drive not ready.

PC Tools Desktop has unsuccessfully tried to access a drive. This message might indicate that the drive door is open, the disk is bad, or the drive is out of alignment. If you suspect a bad disk, try running DiskFix to correct the problem.

Bad CRC on diskette read.

This message indicates a bad disk or a disk controller failure. If you suspect that the disk is bad, try running DiskFix to correct the problem.

Bad command passed to diskette I/O.

PC Tools Desktop passed an illegal command to a device. For example, PC Tools Desktop might have passed a command for a floppy drive to a hard drive. Be sure the correct type of device is specified and then try the procedure again.

Bad request.

PC Tools Desktop passed an illegal command to a device. For example, PC Tools Desktop might have passed a command for a floppy drive to a hard drive. Be sure the correct type of device is specified and then try the procedure again.

Cannot copy a high-capacity diskette onto low-capacity diskette drive.

Copy Disk issues this message when you try to copy a 1.2 or 1.44MB diskette to a drive with different capacity. The same drive should be used for both target and source.

Cannot open temp file.

PC Tools Desktop has been unsuccessful in its attempt to open a temporary file. This message could indicate insufficient disk space for the file, an incorrect path was specified, or the path is pointing to a read-only directory.

Controller failure.

The disk controller has failed.

Error code was xxx.

This message is returned by DOS and contains a DOS error code. See your DOS manual for an explanation of this code.

Error(s) detected, copy may be unusable.

During the copying of a floppy disk, errors were detected. However, the data read, even though it may be bad, was used to create the copy. This may render an unusable floppy disk usable in spite of the errors.

Fatal System Error.

A serious error has occurred in your system and it is unable to continue operating. Restart your computer by pressing Ctrl Alt Del and see if the problem is corrected.

File Creation Error.

This message indicates that the disk you are copying to is full, the file exists in the directory but is marked "read-only," or the maximum number of files in the root directory has been reached.

File Header Missing.

If you are trying to view a .PCX file and receive this message, it means that the file you are viewing is in a non-standard PCX format. Genus Microprogramming publishes a program called PCX Programmer's Toolkit that can help repair these kinds of files.

Insufficient Memory.

Exit from PC Tools Desktop, remove it from memory using the KILL command, and reinstall it using the /A option with a larger number. You can also add the /A option to your AUTOEXEC.BAT file. (See the *PC Tools Desktop Command-Line Options* chapter.)

Invalid drive specified.

A function was requested that required a floppy drive. The drive letter given does not represent a floppy drive.

Invalid or unlike drives specified or must be a single drive copy.

Copy Disk issues this message when the specified drives do not use the same media and capacity.

Media type not found.

PC Tools Desktop cannot find the type of disk it is looking for. Be sure that the correct drive is selected and try the operation again.

No hard drive detected. No parking performed.

The Park Disk Heads function could find no hard drive whose heads could be parked.

Not enough memory to run PC Tools Desktop.

You could receive this error if you have PC Tools Desktop, Mirror, PC-Cache, and Desktop all loaded in memory when you try to run an application with the DOS command line on. Remove Desktop with the KILL command and try again.

No response (not ready condition).

PC Tools Desktop is trying to read an invalid drive (for example, one that does not contains a disk). Insert a disk into the drive that PC Tools Desktop is trying to read, then choose **Retry**. You can then change the current drive by pressing Ctrl and the letter of the drive you want (for example, Ctrl C to change to drive C). If you received this message when trying to start PC Tools Desktop, be sure to save your configuration file so that PC Tools Desktop will read the new current drive the next time you start it.

No room for temp file.

PC Tools Desktop is attempting to create a temporary file during an operation, but there is not enough disk space for the file.

Overlay file build stopped. Unknown msg.
Overlay path is bad.
No handles for overlay file building.
Access denied to build overlay file.
Bad handle detected.
You can also use the /Od parameter to force the use of a different drive for the overlay file.

Any of these messages may be issued when creating or using the PCSHELL.OVL file. If the error occurs when starting PC Tools Desktop for the first time, try using another drive for the overlay file. If the error occurs during normal operation, the overlay file has become inaccessible. The most likely reason is a lack of handles. To correct this, increase the specification for the FCBS and FILES parameters in your CONFIG.SYS file. The errors may also occur if the overlay file has been deleted or modified.

Overlay file not found.

This message is issued when an error occurs while trying to load the PCSHELL.OVL file. Something has made the file inaccessible. Most likely the file was deleted, renamed, changed, or moved.

Packed File Corrupt.

This error may indicate that an executable file is trying to load into the lower 64K of memory. Try increasing the BUFFERS= line in CONFIG.SYS to 30 or 40, or try loading Mirror or PC-Cache (which loads into this portion of memory). Then try running the suspect file. If the error still occurs, it may be the result of a damaged file.

Program Execution Error.

This message is returned by DOS and contains DOS error codes. See your DOS manual for an explanation of these codes.

Program List Memory Error.

This message can appear in two situations:

- **When starting PC Tools Desktop:** There is not enough memory available for all the entries on the program list. Choosing **OK** starts PC Tools Desktop with a truncated program list.

WARNING Do not save your configuration file when your program list is truncated, or the truncated entries will be permanently deleted.

- **When adding an entry to the program list:** There is not enough memory available to add additional items. Choosing **OK** terminates the add procedure and returns you to the main PC Tools Desktop screen.

Try restarting PC Tools Desktop using the /ME option to increase the amount of memory reserved for the program list. See the *PC Tools Desktop Command-Line Options* chapter for details.

Read fault.

This message usually occurs during an attempt to print. PC Tools Desktop thinks a device is attached, but is unable to read information from that device.

Reading System Areas.

This message occurs when you are trying to access networked or other linked drives. Reading the various system areas may take a while, depending on how many linked computers must be accessed. If you don't want to wait for PC Tools Desktop to finish reading the drive, you can reset the drive by pressing the drive letter (for example, press C to reset the current drive to drive C).

Sector is in the system area. Confirm update.

This message is issued by the sector editor to warn you that you are updating a sector that is part of the boot sector, FAT, or root directory.

Seek operation failed.

PC Tools Desktop cannot access the required location on the disk. Try the procedure again. If the error persists, try running DiskFix to correct the problem.

Shell crack xxx.

A serious error has occurred in PC Tools Desktop and it is unable to continue operating. Call our technical support staff for assistance.

The CPU has been tested and has been found to allow interrupts after a change to the stack segment.

The CPU should be replaced with a more recent version because it could cause random system problems.

When exiting from System Information, the CPU is tested. This deficiency should not cause a problem with PC Tools Desktop, but other programs you have may display occasional problems that can be explained in no other way. These problems have been noted on some early 8088 chips.

This function supports only floppy diskette drives.

The Copy and Compare commands for disks operate only on floppy disk drives.

Too many files to process.

The number of files PC Tools Desktop can process depends on the amount of memory available. Try running PC Tools Desktop in non-resident mode, or use the /A option.

Unable to read sector.

PC Tools Desktop could not read a sector on your disk. Try to perform the procedure again. If the error persists, try running DiskFix to correct the problem.

Unknown media type.

PC Tools Desktop doesn't recognize the disk media. Run DiskFix to repair it.

Vectors are not as expected. Other memory-resident programs may have been loaded after PC Tools Desktop. Removal of PC Tools Desktop may produce unpredictable results.

During the removal of PC Tools Desktop as a resident program, it was discovered that the interrupt vectors have been changed in a manner indicating that another program was made resident after PC Tools Desktop. If you continue, unpredictable results could occur. Using Assign, Print, Mode, or Fastopen could cause other resident programs to be installed. You should NOT continue, but press Ctrl Alt Del to restart your computer and regain the memory.

View memory shortage.

There is not enough memory available to run the viewer. You can free additional memory by using the /ME option to decrease the amount of memory allocated for the program list. If you are running PC Tools Desktop resident, you might also want to increase the amount of resident memory reserved for PC Tools Desktop by using the /A option. See the *PC Tools Desktop Command-Line Options* chapter for details.

Write fault.

This message usually occurs during an attempt to print. PC Tools Desktop thinks a device (such as a printer) is attached, but can find no device to write to.

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Before You Begin Data Recovery

This chapter tells you where to look if you need to restore data immediately. It also provides important information on using PC Tools programs to guard against data loss in the future.

NOTE *The most effective way to ensure against losing data is to back up your hard disk regularly.*

Recovering Data

If you need to recover data now, check this table to see which utility to use and which chapter to turn to for more information.

WARNING If these programs are not already installed on your hard disk and you need to recover data, start them from the original floppy disk (or a working copy).

See *Part 3 Data Recovery and System Utilities* in this volume for details about the data recovery programs. See Volume 2 for Central Point Anti-Virus.

Problem	Where to Go for More Information
Accidentally deleted file	*Undelete* chapter in this volume
Virus infection	*Central Point Anti-Virus* in Volume 2
Accidentally formatted disk	*Unformat* chapter in this volume
Any kind of disk problem	*DiskFix* chapter in this volume
General computer problem; or DOS or CHKDSK error message	*Troubleshooting Data Recovery and System Utilities* chapter in this volume
Damaged Lotus 1-2-3, Symphony, Paradox, WordPerfect, Rbase, or dBASE file	*FileFix* chapter in this volume

Protecting Data

Central Point Software recommends that you take the following steps to protect against data loss in the future:

What to Do	Where to Go for More Information
Create an emergency disk, which you can use to restart your computer and restore it to working condition.	*Build Emergency Disk* chapter in this volume
Run Mirror from your AUTOEXEC.BAT file to improve the ability of Undelete, the emergency disk, DiskFix, and Unformat to recover data.	*Mirror* chapter in this volume
Make regular backups of your hard disk with Central Point Backup.	*Central Point Backup* in Volume 2
Run VWatch or VSafe from your AUTOEXEC.BAT file to protect your system from virus infection.	*Central Point Anti-Virus* in Volume 2
Run BootSafe from your AUTOEXEC.BAT file to protect your boot sector and partition table from virus infection.	*Central Point Anti-Virus* in Volume 2
Do a daily anti-virus scan on your local hard drives.	*Central Point Anti-Virus* in Volume 2
Run DiskFix on a regular basis to detect disk problems.	*DiskFix* chapter in this volume
Use Compress on a regular basis to avoid file fragmentation and make it easier to recover deleted files or an accidentally formatted disk.	*Compress* chapter in this volume
Use SI (System Information) to print a report of all your system information before and after you modify your computer system.	*System Information* chapter in this volume
Always use PC Format to format disks.	*PC Format* chapter in this volume

Undelete

Undelete recovers files and directories protected by these methods of delete protection: Delete Sentry, Delete Tracker, DOS, Novell NetWare 386, and DR DOS's DelWatch.

Undelete is most effective when you protect files with one of the PC Tools delete protection methods and you run Mirror regularly, but it can undelete most files even if they are not protected. For information about configuring Delete Sentry and Delete Tracker, see the *Data Monitor* chapter in this part.

NOTE *If you are not using Delete Sentry, undelete files as soon as possible for the best chance of recovering all your data.*

If you have accidentally erased or formatted your entire disk, use Unformat to recover the disk. See the *Unformat* chapter in this part.

Here's what you'll find in this chapter:

- **Starting Undelete** explains how to start Undelete and describes the main Undelete window.
- **Quickly Undeleting a File** explains how you can undelete from a list of deleted files in each directory.
- **Deleted File Condition** describes the various file conditions and how they differ.
- **Delete Protection Methods** describes each method of delete protection: Delete Sentry, Delete Tracker, DOS, Novell NetWare 386, and DR DOS's DelWatch.
- **Getting More File Information** describes the procedure for getting specific information about a file.
- **Sorting the File List** explains how to change the order in which Undelete displays files.
- **Selecting Files** explains how to select individual files or groups of files to undelete.
- **Viewing Files** explains how to examine the contents of any file in the file list.
- **Automatic Undelete Methods** explains how you can undelete most files automatically and perfectly intact, in the directory from which they were deleted or to another drive.

- **Undeleting Files on a Network** explains how to undelete files on a network drive if they were protected by the Delete Sentry or NetWare 386 method of delete protection.
- **Undeleting Directories and Their Files** explains how to undelete entire directories and the files they contained.
- **Finding Deleted Files** explains how to find deleted files that match a file-name specification, contain a word or phrase, were protected by a specified delete protection method, or belong to a search group (for example, Lotus 1-2-3 files).
- **Scanning the Disk for Lost Files and Deleted Data** explains how to scan the entire disk for "lost files"—deleted files whose directories were also deleted. If any portion of a deleted file is still on the disk, Undelete can find that data by scanning unassigned disk space for deleted data. You can specify the type of data (for example, Lotus 1-2-3 or dBASE) or a text string to scan for.
- **Showing Existing Files** explains how to view a file's contents to see if it contains the data you want to recover.
- **Advanced Undelete Methods** explains how to manually undelete files that have not been protected by PC Tools and may be missing data.
- **Purging Deleted Files** explains how to remove deleted files by purging them from the disk.
- **How the Delete Protection Method Affects File Recovery** explains how all methods of delete protection work to salvage data on your disk.
- **Command-Line Options** describes command-line options for Undelete.

Starting Undelete

WARNING If you have not installed Undelete on your hard disk, start it from the emergency disk or the original floppy disk to avoid overwriting any part of the deleted file.

▶ Choose **Undelete** from the Tools menu in PC Tools Desktop.

or

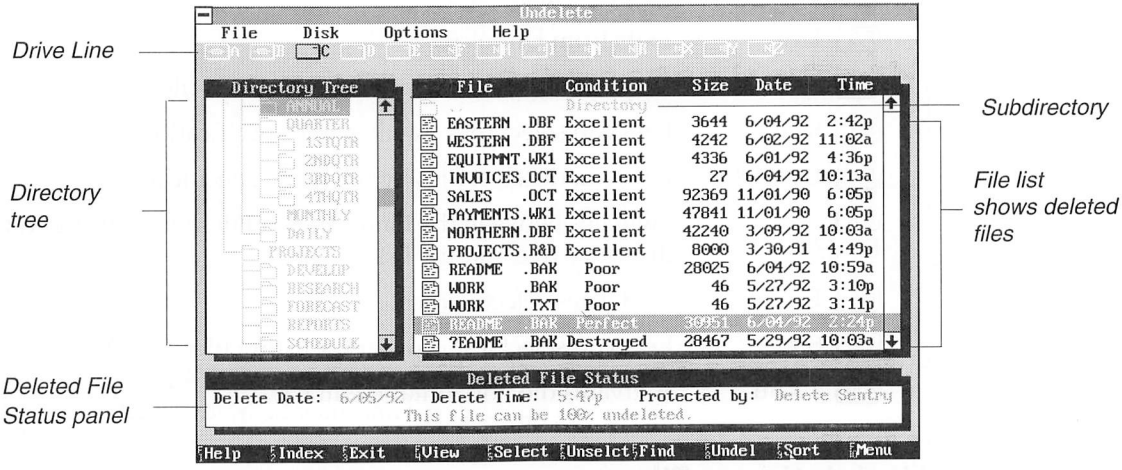
From DOS, type

UNDEL Enter

If a password has been assigned, enter it and choose **OK**.

What You See

When the Undelete window appears, the directory tree on the left shows the directory structure of the selected drive. The file list on the right shows subdirectories and files that have been deleted from the highlighted directory. (When you delete a file, you will no longer see it when you use the DOS DIR command, but its data may still be on the disk.)


Drive Line
Directory tree
Deleted File Status panel
Subdirectory
File list shows deleted files
Undelete
File Disk Options Help
Directory Tree
File Condition Size Date Time
EASTERN .DBF Excellent 3644 6/04/92 2:42p
WESTERN .DBF Excellent 4242 6/02/92 11:02a
EQUIPMNT.WK1 Excellent 4336 6/01/92 4:36p
INVOICES.OCT Excellent 27 6/04/92 10:13a
SALES .OCT Excellent 92369 11/01/90 6:05p
PAYMENTS.WK1 Excellent 47841 11/01/90 6:05p
NORTHERN.DBF Excellent 42240 3/09/92 10:03a
PROJECTS.R&D Excellent 8000 3/30/91 4:49p
README .BAK Poor 28025 6/04/92 10:59a
WORK .BAK Poor 46 5/27/92 3:10p
WORK .TXT Poor 46 5/27/92 3:11p
README .BAK Perfect 30951 6/04/92 2:24p
?EADME .BAK Destroyed 28467 5/29/92 10:03a
Deleted File Status
Delete Date: 6/05/92 Delete Time: 5:47p Protected by: Delete Sentry
This file can be 100% undeleted.
Help Index Exit View Select Unselct Find Undel Sort Menu

Drive Line: Shows the currently selected drive.

Directory tree: A graphical representation of all directories on the current drive.

File list: Lists subdirectories and all deleted files from the highlighted directory. If a question mark (?) appears as the first character of the file name, this means that the deletion was not recorded by delete protection.

If you are undeleting files on a network drive, Undelete comes up with an expanded file list rather than the directory tree and file list. See "Undeleting Files on a Network" later in this chapter.

Deleted File Status panel: Tells you when and how the highlighted file was deleted and gives details about the file's condition.

Function Keys

The following function keys are available in Undelete:

Function Key	Description
F1 Help	Provides online help about the selected item.
F2 Index	Displays the Help index.
F3 Exit	Exits from Undelete.
F4 View	Displays the contents of the highlighted file.
F5 Select	Lets you select files by file name specification.
F6 Unselct	Lets you deselect files by file name specification.
F7 Find/Tree	Switches between the Find Deleted Files window and the directory tree and file list.
F8 Undel	Undeletes selected files.
F9 Sort	Lets you select a sort order for listing files.
F10 Menu	Activates the horizontal menu bar.

Quickly Undeleting a File

If you are familiar with Undelete, or if you feel comfortable using a new software package, then follow these steps to undelete a file quickly. If you have never used Undelete, you may want to read "Deleted File Condition" following this section before you begin undeleting files.

1. Using the mouse or keyboard, move the highlight bar in the Undelete directory tree and file list to the file that you want to undelete.
   - If the deleted file is on a different drive, click the drive you want to select, or press Ctrl and the drive letter.

2. To select a single file, move the highlight bar to the file you want to undelete and click the left mouse button or press Enter or Spacebar.

   You can quickly move to a file listed in the active file list by typing the first few letters of the file's name.

   A dialog box appears, containing the letters you type. As you type each letter, the highlight in the window moves to the first file that matches the letters you've typed so far. Unless your file names are very similar, you don't have to type the entire name to locate a file in the list, but you can type up to eight characters.

   ▶ To close the Speed Search dialog box press Enter or Esc.

   The selected file changes color. You can select more than one file this way.

3. Undelete the file.

   ▶ If the condition of the file is listed as Perfect, Excellent, or Good, choose **Undelete** from the File menu or press F8 to undelete the file automatically.

   Undelete changes the condition to Recovered when you have undeleted the file.

   ▶ If the condition of the file is Poor, or if it is Destroyed and was protected by DOS, you will need to use one of the Advanced Undelete methods described later in this chapter.

Deleted File Condition

The condition listed for each file name indicates how completely Undelete can recover it. Undelete assigns conditions based on the status of the file's clusters. A *cluster* is a unit of disk space; a file occupies one or more clusters. A file's clusters may be in consecutive order or scattered about the disk (fragmented).

NOTE *The condition assigned to files listed as protected by DOS is most accurate when you run Compress and Mirror regularly. See the* Compress *and* Mirror *chapters in this part.*

Condition	What You Can Expect to Recover
Perfect	You can undelete the file completely and automatically. This is the condition of all files protected by these methods: Delete Sentry, Novell NetWare 386 Salvage, and DR DOS DelWatch.
Excellent	All the file's clusters are available and unfragmented (in consecutive order on the disk) and can be undeleted automatically. There is a small chance that some data may be overwritten. This is the best condition you can expect for files protected by the Delete Tracker method of delete protection. DOS-deleted files that are protected by Mirror, or that are small or unfragmented may also be in Excellent condition.
Good	One or more of the file's clusters are in use by another file; therefore, they are not available. Some data may be overwritten.
Poor	The file's first cluster and possibly more are not available. Use an Advanced Undelete method to recover as much as is still available.
Destroyed	The file cannot be undeleted because all of its known clusters are in use by other files. (However, you may be able to recover some of the data from a DOS-deleted Destroyed file using an Advanced Undelete method.)
None	The file cannot be undeleted because it had no data in it when it was deleted. It is a file entry with a size of 0 bytes.
Existing	The file is not a deleted file. It was added to the list by the Show Existing Files option so that you can rename it or add deleted clusters to it manually, using Append to Existing File, one of the Advanced Undelete methods.
Lost File	The file was found by scanning for lost deleted files. It is a deleted file whose directory cannot be determined. Most likely, its directory has been deleted.
Recovered	The file was undeleted during the current session.
Purged	The file was purged from Delete Sentry, DelWatch, or NetWare during the current session. You can no longer recover the file.

For technical information about the status of data in Excellent, Good, Poor, and Destroyed files that may help you decide how best to undelete files with those conditions, see "How the Delete Protection Method Affects File Recovery," near the end of this chapter. These conditions have slightly different implications, depending on whether the file was protected by Delete Tracker or DOS when it was deleted, and on whether you have a recent Mirror file.

Delete Protection Methods

The Deleted File Status panel tells you what highlighted file's delete protection method was when it was deleted.

Protection Method	How the Method Affects File Recovery and Condition
Delete Sentry	Indicates that the Delete Sentry method of delete protection was used. Files can be undeleted in Perfect condition because they are saved in a hidden directory.
Delete Tracker	Indicates that the Delete Tracker method of delete protection was used. DOS leaves deleted file data on the disk but marks the file's clusters as available. The Delete Tracker method records the cluster addresses of deleted files. As long as the file's clusters have not been overwritten by new data, a Delete Tracker-protected file can be undeleted in Excellent condition. The Delete Tracker method was available in versions of PC Tools prior to Version 7 as Mirror Delete Tracking.
DOS	Indicates that no delete protection method was used. When DOS is the only source of information, files are undeleted based on their entries in the DOS directory and in the File Allocation Table (FAT). If you have a recent Mirror file and turn on the Use Mirror File option from the Options menu, Undelete attempts to use Mirror's copy of the FAT to find all of the file's clusters. Without a Mirror file, the DOS method is effective only on recently compressed disks because DOS does not keep track of all the pieces of fragmented files.
NetWare 386	Indicates that Novell NetWare's method of delete protection was used on the network drive. Files can be undeleted in Perfect condition because they actually remain on the drive until they are purged or the space they occupied is overwritten. This method of delete protection must be configured by the network administrator and users given Create rights to retrieve files prior to using Undelete.
DelWatch	Indicates that the DR DOS method of delete protection, DelWatch, was used. Files can be undeleted in Perfect condition.

For technical details about these methods, see "How the Delete Protection Method Affects File Recovery," later in this chapter.

Getting More File Information

You can get additional information about any file you highlight by choosing **File Info** from the File menu.

Sorting the File List

By default, Undelete sorts by file name. However, you can change the order in which Undelete displays files by selecting a different sort order.

For example, you might want to see all the .BAT files or all the files created on a certain date listed together, so you could quickly find the one you wanted to undelete. Or, if you knew that the file was very small, you might sort the list in order of size.

If you select more than one file to undelete, the sort order determines the order in which the files will be undeleted. If you are undeleting a group of files at one time that have different conditions, before undeleting them, sort them in order of condition so that Undelete can recover the files that are in the best condition first. (The displayed condition of a file may change as previous files are undeleted.)

Changing the Sort Order

1. Choose **Sort by** from the Options menu.
2. In the Sort by dialog box, select a sort order and then choose **OK**.

   Name: Sorts the files by file name, which is the default.

   Extension: Sorts the files by file extension.

   Size: Sorts the files by size, with the smallest files first.

Deleted Date and Time: Sorts files protected by Delete Sentry and Delete Tracker in order of the date that files were deleted. Within each date group, files are sorted in order of time deleted. DOS-deleted files that have an unknown date are listed last in unchanged order.

Modified Date and Time: Sorts the files in order of the date that files were last modified. Within each date group, files are sorted in order of time last modified.

Directory: Sorts the files alphabetically by directory name. This option is available only in the expanded-file list displayed for network drives and files found by specification (both described later in this chapter), where the directory tree is not shown.

Condition: Sorts the files by condition, in the following order: Perfect, Excellent, Good, Poor, Destroyed, Existing.

Selecting Files

To	Do This
Select a single file	Move the highlight bar to the file you want to undelete and click the left mouse button or press Enter or Spacebar. The selected file changes color. You can select more than one file this way.
Select or deselect a group of files with the mouse	Press and hold the right mouse button, position the highlight bar over the first file, then also press and hold down the left mouse button. Drag the cursor over any additional files you want to select or deselect. Release both mouse buttons when finished.
Select a group of files by specification	Choose **Select by Name** from the Options menu, enter a file specification, and choose **OK**. Selected files change color.
Deselect a group of files by specification	Choose **Deselect by Name** from the Options menu, enter a file specification, and choose **OK**. The specified files are deselected.

Viewing Files

You can examine the contents of any file in the file list. The file viewer lets you see whether all the data is intact and in the correct order, or whether some data is missing, damaged, or overwritten. Files are shown in their native format, when it can be determined. Otherwise, they are shown in either text or binary format.

The View function is not available when you run Undelete from the emergency disk. If you do not have View's files in the same directory as Undelete, you will not be able to view files.

To see a file in its native format:

- Choose **View File** from the File menu or press F4.

  When you activate the View window by clicking on it with the mouse or using Tab, the function keys change. Using the new function keys, you can zoom and unzoom the View window, and you can view the contents of the next or previous file. If you selected multiple files before choosing **View File**, you'll see the next or previous selected file; otherwise, you'll see the next or previous file in the file list.

For more help getting around in the viewer window, see the *View* chapter in this part, or press F1 in the active View window.

If, after viewing a file, you decide it is too badly damaged to undelete automatically, choose an Advanced Undelete method, discussed later in this chapter.

TIP *When you activate the View window, if you get a message that the viewer cannot use its current view type for the entire file, this indicates that a portion of the file has been overwritten.*

Automatic Undelete Methods

Once you have selected one or more files or directories, decide on an undelete method based on the condition of the deleted file (see "Deleted File Condition," earlier in this chapter). The methods described below will undelete directories as well as files.

TIP *If you select a DOS-deleted file and have run Mirror recently, turn on the* ***Use Mirror File*** *option from the Options menu for best results. (This option is dimmed and deselectable when there is no Mirror file.)*

Undeleting a File Automatically

If	Then
A selected file's condition is Perfect, Excellent, or Good	Choose **Undelete** from the File menu or press F8 to undelete the file automatically, in the directory from which it was deleted.
The file's condition is Good	You may want to undelete it to another drive, as described next, or view it to verify its condition, as described earlier in "Viewing Files." At least some of the disk space occupied by a Good file may be in use by another file. (That part of the file will not be included if you use **Undelete**, but will be included if you use **Undelete to**.)

Undeleting a File to a Different Drive

As a safety precaution, you can undelete a file to a different drive, leaving the original deleted file unchanged. You can undelete to a floppy disk, for example. Then, if that automatic undeletion does not recover all the data you want, you still have the option of rebuilding the unchanged deleted file one cluster at a time (see "Advanced Undelete Methods," later in this chapter).

1. Choose **Undelete to** from the File menu.
2. Select the drive where you want the undeleted file(s) to be placed and choose **OK**.
3. For each selected file, accept or change the default directory path, and choose **OK**.

   The file is undeleted to the specified path under its original name. If the first character of the file name was "?" Undelete replaces it with "X."

Renaming an Existing File

Undelete lets you know if a file you are undeleting has the same name as an existing file. (For example, this might happen if the deleted file is a previous version of an existing file.) You can rename the existing file before you undelete the deleted one. That way, you can keep both files in the same directory.

1. If the directory tree and file list are not visible, choose **Tree & File List** from the File menu or press F7.

2. Choose **Show Existing Files** from the Options menu to add all existing files to the list of deleted files in each directory.
3. Select the existing file you want to rename.
4. Choose **Advanced Undelete ➤ Rename Existing File** from the File menu.
5. In the Rename Existing File dialog box, type a new name for the existing file and choose **Rename.**
6. Once the existing file has been renamed, you can use **Undelete** to recover the deleted file that would have duplicated the existing file's name. (To remove the existing files from the list, choose **Show Existing Files** again.)

Undeleting Files on a Network

If you are undeleting files on a network drive, Undelete lists the files users have deleted that were protected by Delete Sentry or Novell NetWare 386 method of delete protection. In place of a directory tree, Undelete shows the deleted files' path in an expanded file list. If a network directory is hidden, Undelete won't display the files unless the directory's hidden attribute is changed. Also, files deleted by other users do not appear in the list if you are using Delete Sentry, but the Novell NetWare method of deletion protection shows all files. You can undelete files that you have deleted with your current user name.

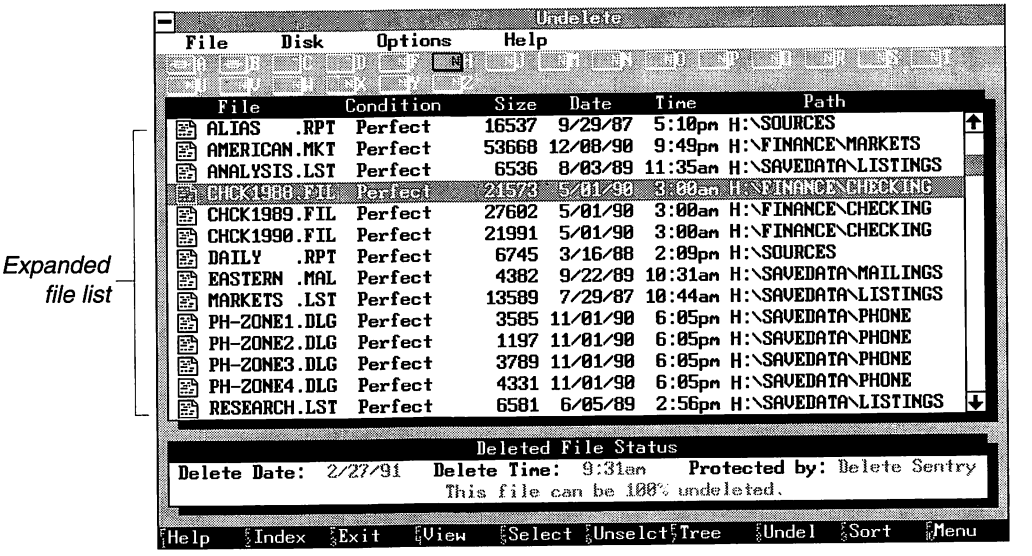
If you use Novell NetWare's method of delete protection to protect the network drive, users can see deleted files, but cannot recover files unless the network administrator has assigned Create rights to the directory that contained the deleted files.

If none of these methods of delete protection were used on the network drive, Undelete does not list any deleted files.

The following commands are not available if you are undeleting files on a network drive:

- **Tree & File List** on the File menu
- **Advanced Undelete** on the File menu
- All commands on the Disk menu
- **Show Existing Files** on the Options menu
- **Use Mirror File** on the Options menu

For more information, see "Deleted File Condition" and "Delete Protection Methods," earlier in this chapter.


Expanded file list
Undelete
File Disk Options Help
File Condition Size Date Time Path
ALIAS .RPT Perfect 16537 9/29/87 5:10pm H:\SOURCES
AMERICAN.MKT Perfect 53668 12/08/90 9:49pm H:\FINANCE\MARKETS
ANALYSIS.LST Perfect 6536 8/03/89 11:35am H:\SAVEDATA\LISTINGS
CHCK1988.FIL Perfect 21573 5/01/90 3:00am H:\FINANCE\CHECKING
CHCK1989.FIL Perfect 27602 5/01/90 3:00am H:\FINANCE\CHECKING
CHCK1990.FIL Perfect 21991 5/01/90 3:00am H:\FINANCE\CHECKING
DAILY .RPT Perfect 6745 3/16/88 2:09pm H:\SOURCES
EASTERN .MAL Perfect 4382 9/22/89 10:31am H:\SAVEDATA\MAILINGS
MARKETS .LST Perfect 13589 7/29/87 10:44am H:\SAVEDATA\LISTINGS
PH-ZONE1.DLG Perfect 3585 11/01/90 6:05pm H:\SAVEDATA\PHONE
PH-ZONE2.DLG Perfect 1197 11/01/90 6:05pm H:\SAVEDATA\PHONE
PH-ZONE3.DLG Perfect 3789 11/01/90 6:05pm H:\SAVEDATA\PHONE
PH-ZONE4.DLG Perfect 4331 11/01/90 6:05pm H:\SAVEDATA\PHONE
RESEARCH.LST Perfect 6581 6/05/89 2:56pm H:\SAVEDATA\LISTINGS
Deleted File Status
Delete Date: 2/27/91 Delete Time: 9:31am Protected by: Delete Sentry
This file can be 100% undeleted.
F1 Help F2 Index F3 Exit F4 View F5 Select F6 Unselct F7 Tree F8 Undel F9 Sort F10 Menu

Undeleting Directories and Their Files

NetWare does not keep track of deleted directories, but the program does track the *files* in deleted directories. All other methods for finding files described in this chapter also find deleted directories.

A directory contains file entries identifying the names, starting locations, and other information for all files that belong to it. When you delete a directory, deleted files that were in that directory no longer appear in Undelete's file lists. However, the deleted directory appears, identified with a folder icon and <dir> listed as the file size. As soon as you undelete a directory, any deleted files it contained appear in Undelete's file lists.

If you cannot find a deleted file, see if you can find its directory using the directory tree and file list. When you undelete the directory, it appears in the directory tree. Select that directory, then select and undelete any of its deleted files.

If you cannot find a deleted file's directory, you can still find the file or its data by using one of Undelete's disk scan methods (see "Scanning the Disk for Lost Files and Deleted Data," later in this chapter).

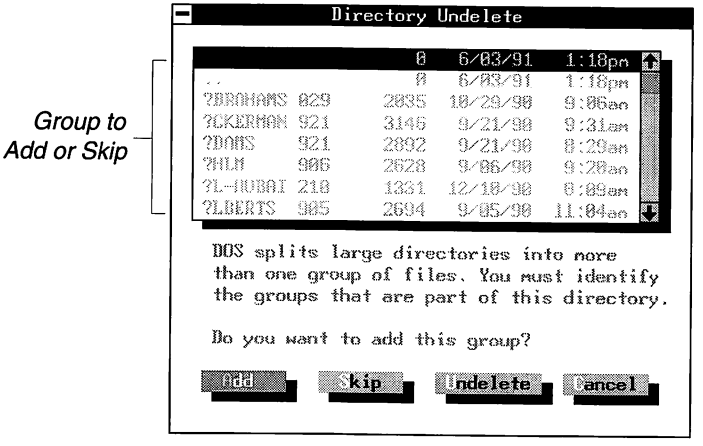
Undeleting a Directory

As you add files to a directory, it grows in size. DOS splits large directories into more than one group of file entries, and does not keep track of the additional groups if you delete the directory.

You can undelete most directories automatically. However, when Undelete cannot determine the location of all the parts of a directory, it displays the Directory Undelete dialog box.

Identifying Groups of File Entries Belonging to a Directory

In the Directory Undelete dialog box, identify the groups of file entries that belong in the directory you are undeleting.


Group to
Add or Skip
Directory Undelete
0 6/03/91 1:18pm
.. 0 6/03/91 1:18pm
?BROWNAMS 029 2035 10/29/90 9:06am
?CKERMAN 921 3145 9/21/90 9:31am
?DOMS 921 2892 9/21/90 8:29am
?HLM 906 2628 9/06/90 9:20am
?L-HUBAI 218 1351 12/18/90 8:09am
?LBERTS 905 2694 9/05/90 11:04am
DOS splits large directories into more
than one group of files. You must identify
the groups that are part of this directory.
Do you want to add this group?
Add
Skip
Undelete
Cancel

In this dialog box, you do not select individual files to undelete. Rather, you decide whether the entire group of file entries displayed in the list box represents files that belong in the directory you want to undelete.

If	Then
The group of file entries displayed in the scrollable file list was in the directory	Choose **Add**. Undelete adds this group and searches for the next probable group of file entries.
The displayed group of file entries was not in the directory	Choose **Skip**. Undelete searches for the next probable group.

1. Continue adding groups of file entries that belong in the directory.

   When you have added the same number of groups as originally belonged in the directory, Undelete recovers the directory automatically (you don't have to choose Undelete) and rebuilds the directory tree to include it.

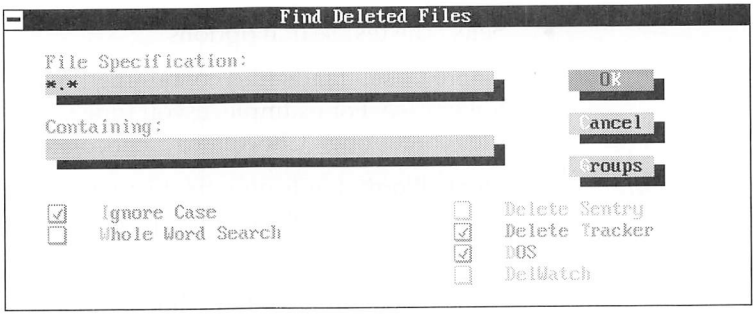
2. Choose **Undelete** to recover the directory before all groups are added.

Finding Deleted Files

If you cannot find a deleted file easily by looking for it in the Undelete directory tree and file list, or when you want to display all deleted files on the disk in one listing, you can search for file(s) by entering a file specification.

1. On the drive line above the Undelete directory tree and file list, click the drive from which the file was deleted, or press Ctrl and the drive letter.

2. Choose **Find Deleted Files** from the File menu or press F7.



File Specification text box: Lets you specify the name of the file or files you're searching for, using the DOS wildcard characters * and ?.

Containing text box: Lets you narrow the search to deleted files that contain a specific text string. The program will find only files that contain that string.

Groups: Finds files associated with a particular application. See "Using Search Groups," later in this section.

3. In the File Specification text box, enter the file specification that describes the file(s) you want to find.

   You can include more than one specification, separating each by one space.

   For example, enter `*.EXE *.COM` to include all program files.

   You can exclude files by prefacing a file specification with a minus sign.

For example, enter `*.BAT -\*.BAT` to include all batch files except those in the root directory.

For more information about file specifications, see the *Working in the PC Tools Environment* chapter in *Part 1 Getting Started.*

- Use ← and → to move the cursor one character right or left, and Home and End to position the cursor at the beginning or end of the entry.
- To insert characters, scroll to where you want to insert them, press Ins and type the additional characters. To delete text, position the cursor after the character to be deleted and press Del.

You can use file specifications and file contents together to narrow your search.

For example, if you enter the file specification `*.DOC` and you enter `budget` in the Containing text box, the program will find all Microsoft Word files that contain the word "budget."

- Enter the text you want to search for in the Containing text box.
- Select the text search options.

  Ignore Case: Finds files containing the text whether it is upper or lower case. For example, if you type CHOCOLATE, Undelete will find files containing "Chocolate," "chocolate," and "ChoCoLate."

  Whole Word: Finds only the text you enter if it is one or more complete words. For example, if you type tort, Undelete will not find "tortellini" or "retorted."

4. Select the delete protection methods to search for and then choose **OK**.

   If no files on the current drive are protected by Delete Sentry, Delete Tracker, or DelWatch, those checkboxes are dimmed and you cannot select them.

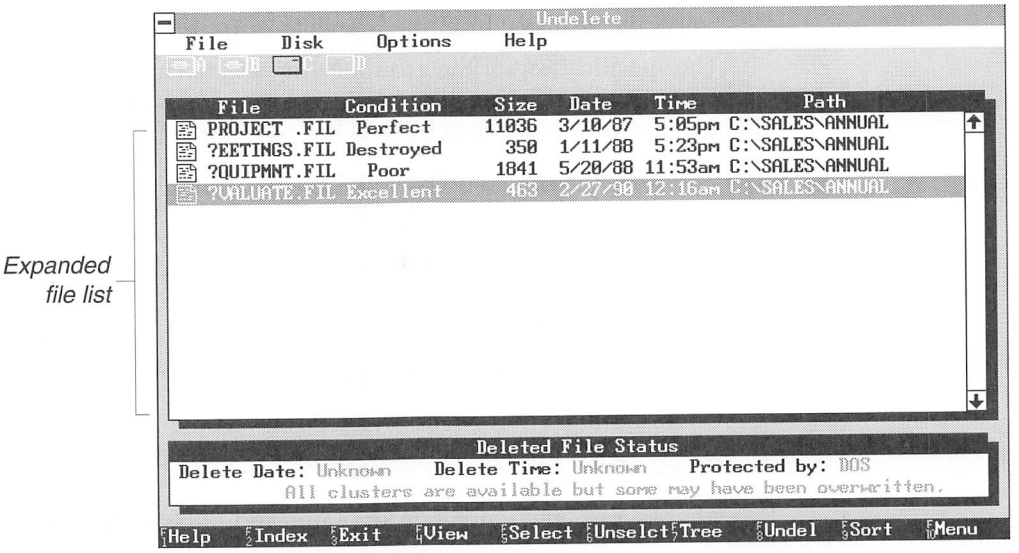
   Delete Sentry: Finds deleted files that match the file and content specifications and were protected by Delete Sentry.

   Delete Tracker: Finds deleted files that match the the file and content specifications and were protected by Delete Tracker.

   DOS: Finds deleted files that match the the file and content specifications and were protected only by DOS.

   DelWatch: Finds deleted files that match the the file and content specifications and were protected only by DR DOS's DelWatch.

   All files that match the specifications appear in the Find Deleted Files window, which contains an expanded file list that shows all files that match your Find Deleted Files specifications, including their paths.


Undelete
File Disk Options Help
File Condition Size Date Time Path
PROJECT .FIL Perfect 11036 3/10/87 5:05pm C:\SALES\ANNUAL
?EETINGS.FIL Destroyed 350 1/11/88 5:23pm C:\SALES\ANNUAL
?QUIPMNT.FIL Poor 1841 5/20/88 11:53am C:\SALES\ANNUAL
?VALUATE.FIL Excellent 463 2/27/90 12:16am C:\SALES\ANNUAL
Deleted File Status
Delete Date: Unknown Delete Time: Unknown Protected by: DOS
All clusters are available but some may have been overwritten.
Help Index Exit View Select Unselct Tree Undel Sort Menu

Expanded file list

For more information, see "Deleted File Condition" and "Delete Protection Methods," earlier in this chapter.

Most menu commands available in the Undelete directory tree and file list are also available in the Find Deleted Files window. The following commands are not available: Show Existing Files, and its related commands, Rename Existing File, and Append to Existing File.

5. To return to the directory tree and file list from the Find Deleted Files window, choose **Tree & File List** from the File menu or press F7.

   The function associated with F7 switches between **Tree** and **Find**, depending on which window you are in. The command on the File menu also switches between **Tree & File List** and **Find Deleted Files**.

Searching for a Group of Files

Search groups make it easy to find deleted files associated with specific applications.

Install creates search groups for all applications found on your hard drive(s). You can edit or delete these groups to suit your needs.

Search groups that you create in Undelete are available to you in FileFind, and vice versa.

1. Choose **Find Deleted Files** from the File menu.
2. Choose **Groups** in the Find Deleted Files dialog box.

3. Select the group(s) from the Search Groups dialog box and choose **OK**.

   The specification for the group(s) you selected appears in the File Specification text box. If you selected more than one group, all of their specifications appear in the text box, separated by spaces.

4. Choose **OK** in the Find Deleted Files dialog box.

   The group(s) you selected remain in effect until you change the file specification or leave the program.

Adding a Search Group

1. Choose **Find Deleted Files** from the File menu.
2. Choose **Groups** in the Find Deleted Files dialog box.
3. Choose **Edit**.
4. Choose **New**, and enter a group name and file specification.

   Enter a file specification that describes the names and location of the files. For example, if all your Microsoft Word files were located in C:\WORD and had the extension .DOC, you could enter the file specification `C:\WORD\*.DOC` to define a group called "Word Files."

   For more information about file specifications, see the chapter *Working in the PC Tools Environment* in *Part 1 Getting Started.*

5. Choose **Save**.
6. To use this group for the next search, select it and choose **OK** in the Search Groups dialog box.

Editing or Deleting a Search Group

1. Choose **Find Deleted Files** from the File menu.
2. Choose **Groups** in the Find Deleted Files dialog box.
3. Choose **Edit**.
4. Select the search group you want to edit or delete.
   - To edit a search group, change the group name, file specification, or both and choose **Save**.

     or

     To delete a search group, choose **Delete**.
5. Choose **OK**.
6. To use this group for the next search, select it and choose **OK** in the Search Groups dialog box.

Scanning the Disk for Lost Files and Deleted Data

If you have not found a deleted file using any of the following methods, you can scan the entire disk for "lost files" or for deleted data that is not associated with any file or directory.

- Looking in the Undelete directory tree and file list
- Using the Find Deleted Files command
- Undeleting the file's deleted directory

Try the Scan for Lost Deleted Files option first. If you cannot find the file(s) you are looking for, you can scan the disk's free clusters for the deleted data.

Scanning for Lost Deleted Files

You can scan the entire disk for lost files—files no longer associated with any existing directory.

1. Go to the directory where you want lost files to be recovered. (Undelete recovers lost files to the current directory.)
2. Choose **Scan for Lost Deleted Files** from the Disk menu.
3. Select the delete protection methods to scan for.

   Delete Sentry: Finds deleted files that match the file and content specifications and were protected by Delete Sentry.

   Delete Tracker: Finds deleted files that match the file and content specifications and were protected by Delete Tracker.

   DOS: Finds deleted files that match the file and content specifications and were protected only by DOS.

   If no files on the current drive are protected by Delete Sentry or Delete Tracker, that checkbox is dimmed and you cannot select it.

4. Choose **OK**.

   Undelete scans the disk for files protected by the method(s) you selected. If you selected more than one method, Undelete scans the Delete Sentry directory first, then the Delete Tracker file, then the entire disk.

   The Scan for Lost Deleted Files dialog box shows the file or cluster number being scanned and the number of scan items found. A progress bar shows you how much of the disk has been scanned.

   When the disk scan is complete, the list of files found appears in the Find Deleted Files window, with Lost File as its condition. Lost files retain their original names and other information, so you can easily select and undelete the file(s) you are looking for.

Scanning Free Clusters for Deleted Data

You can scan the disk's free clusters—disk space no longer associated with any existing file or directory—for a specified type of data or a text string.

NOTE *When Undelete scans the disk's free clusters, it does not look at files protected by Delete Sentry or DelWatch.*

1. Go to the directory where you want clusters containing the specified type of data to be recovered. (Undelete recovers clusters to the current directory.)
2. Choose one of the cluster scans from the Disk menu:
   - If you choose **Scan for Data Types**, select the type of data to scan for (1-2-3 and Symphony, dBASE, or normal text).

     or

     If you choose **Scan for Contents**, specify a word, phrase, or text string to scan for. It doesn't matter whether you use uppercase or lowercase letters.
3. Choose **OK**.

   The dialog box shows the cluster number being scanned and the number of scan items found. A progress bar shows you how much of the disk has been scanned.

   When Undelete finds a contiguous group of free clusters that match the data type, it counts the group as a file and gives it a unique name. Undelete tries to match lost data with directory entries, making its best guess at the file's name. When the disk scan is complete, the list of clusters found appears in the Find Deleted Files window.
4. To see what data the found clusters contain, select one and choose **View File** from the File menu or press F4. (See "Viewing Files," earlier in this chapter.)

Two additional Disk menu commands act on disk scanning:

Set Scan Range: Lets you limit the disk scans to a range of clusters, rather than scanning the entire disk for clusters that could not possibly contain the data you are looking for. For example, if your hard disk has never been more than half full, you could limit the upper end of the cluster range to half the total number of clusters shown in the Cluster Range dialog box. The scan range remains in effect for all disk scans until you change it, leave the program, or change drives.

Continue Scan: Lets you continue a disk scan you interrupted by choosing **Cancel**. (You can interrupt a scan at any time to look at the list of files found to that point.)

Showing Existing Files

You can add existing files to the list of deleted files to rename or add deleted clusters to them. This option is available only when you are in the Undelete directory tree and file list.

When you choose **Show Existing Files** from the Options menu, all existing files are added to each directory's list of deleted files. Once existing files appear, you can select them.

To rename an existing file (to undelete a file whose name already exists), select it and choose **Rename Existing File** from the File menu. For more information, see "Automatic Undelete Methods," earlier in this chapter.

To add deleted clusters to an existing file, select it and choose **Advanced Undelete ➤ Append to Existing File** from the File menu. See the next section, "Advanced Undelete Methods."

Choosing **Show Existing Files** turns the option on and off. To remove existing files from the list, choose the option again.

Advanced Undelete Methods

If one of the automatic undelete methods will not work, Undelete tells you to use one of its advanced file recovery methods.

Manual Undelete: Lets you undelete the highlighted file by selecting the clusters you want in it. Use this method to undelete files listed in Poor condition, on DOS-deleted Destroyed files, or on files listed in Good and Excellent condition that contain some overwritten clusters. You can start with a list of available (free) clusters that Undelete associates with the highlighted file, then add, delete, and reorder free clusters until the file contains the data you want.

Create a File: Lets you construct a new file when Undelete cannot find the file, but you are reasonably sure that it is still on the disk—which can happen, for example, if the file's directory has been overwritten. You enter a new file name and build the file by selecting available (free) clusters.

Append to Existing File: Lets you add available (free) clusters to an existing file. For example, if you realize that some data is missing after you undelete a file manually or create a file from available clusters, use this method to add the additional clusters. Once you have appended available clusters to an existing file's clusters, you can reorder all the clusters and delete any you don't want.

NOTE *When you add a free cluster to a file, it could prevent you from undeleting other deleted files, so do this only after you have undeleted any other files you want to recover that can be automatically undeleted.*

Manually Undeleting a File

1. From the Undelete directory tree and file list or the Find Deleted Files window, select a file to undelete manually. (If you ran Mirror recently, turn on **Use Mirror File** from the Options menu for best results.)
2. Choose **Advanced Undelete ➤ Manual Undelete** from the File menu.
3. If the file you selected is a DOS-deleted file whose first character has been replaced by a question mark, enter a new first character when requested.
4. In the Manual Undelete window you can add, view, move, and delete free clusters from a list that you create. See "The Advanced Undelete Window" later in this chapter.

Creating a New File from Deleted Clusters

1. Choose **Advanced Undelete ➤ Create a File** from the File menu.
2. In the Create a File dialog box, type a name for the new file and choose **OK**.
3. In the Create a File window, you can add, view, move, and delete free clusters from a list that you create. See "The Advanced Undelete Window" later in this chapter.

Adding Deleted Clusters to an Existing File

1. If you are not already in the Undelete directory tree and file list, choose **Tree & File List** from the File menu.
2. Choose **Show Existing Files** from the Options menu.

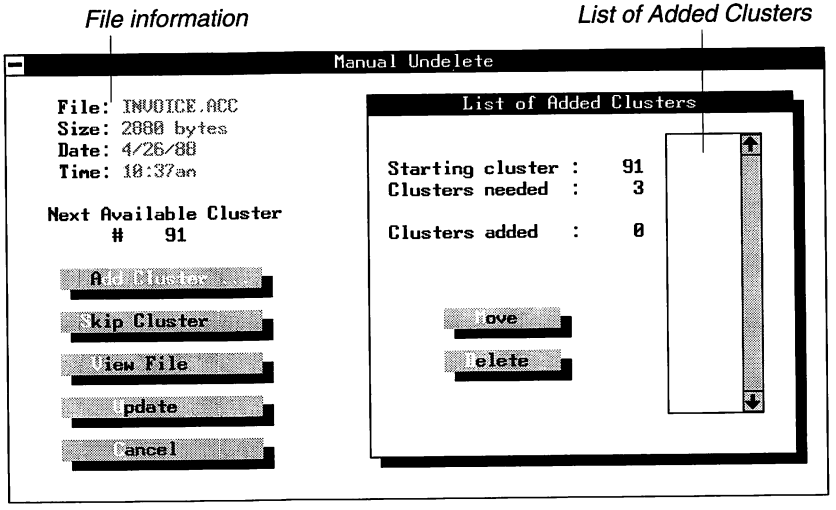
   All existing files are added to the list of deleted files and appear in the directory tree and file list. The condition column identifies them as Existing.
3. Select the existing file you want to add clusters to.
4. Choose **Advanced Undelete ➤ Append to Existing File** from the File menu.

5. In the Append to a File window you can add, view, move, and delete free clusters to the list of clusters occupied by the selected file. See "The Advanced Undelete Window" later in this chapter.

The Advanced Undelete Window

In the Advanced Undelete window, you determine which clusters to include in the file, and in what order. By viewing clusters before you add them and by viewing the assembled file, you can tell whether the clusters you are adding contain data you want.

The window title differs, depending on whether you chose Manual Undelete, Create a File, or Append to a File.



File Information: Includes the name and size of the file you selected to undelete, and the date and time it was last modified.

List of Added Clusters: Lets you assemble a list of clusters you want to include in the undeleted file. You can add all free clusters on the current drive to this list. (*Free clusters* are those not currently associated with any file or directory.) Once you add clusters to this list, you can view the assembled file to see if it contains the correct data, organized the way you want it.

Item	What It Means
Next Available Cluster	The next free cluster on the disk that you can add to the undeleted file.
Starting cluster	The disk location of the file's original first cluster.
Clusters needed	The number of clusters the original file contained.
Clusters added	The total number of clusters you added. Added clusters are listed in the scrollable panel on the right-hand side of the List of Added Clusters. These clusters are not actually assigned to the file until you choose Update.

Undeleting Clusters

Use these buttons on the Advanced Undelete window to assemble the file you want to undelete:

Button	What It Does
Add Cluster	Lets you add all or specified free clusters, view the next available cluster, or scan free clusters for specified data (see the following procedure). Each cluster you add is listed in the scrollable List of Added Clusters panel.
Skip Cluster	Skips to the next available free cluster.
View File	Lets you examine all the clusters you have already added. If the first cluster is a recognizable file type, the clusters appear in native format; otherwise they appear in text or binary format.
Update	Undeletes the file. The File Allocation Table is updated so that the clusters you added (shown in the List of Added Clusters panel) are associated with the undeleted file name.

1. Choose **Add Cluster**.
2. Choose a cluster option.

   Add All Clusters: Available in Manual Undelete only, adds to the list the same number of free clusters originally assigned to the file. For example, if the selected file consisted of eight clusters, then the file's starting cluster and the next seven available cluster numbers will be added to the list. If the deleted file was fragmented, these may or may not contain the data that originally belonged to the file. You can view each cluster to find out.

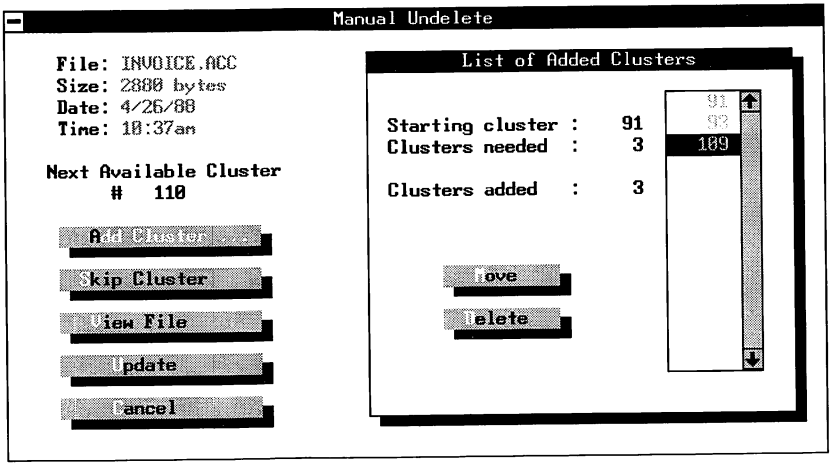
   Add This Cluster: Adds the next available cluster (shown at the top of the Cluster Options dialog box) to the list.

View This Cluster: Displays the contents of the next available cluster so you can decide whether to add it. Once in the Cluster Viewer, you can view each next available free cluster without leaving the viewer window.

Scan for Contents: Lets you scan the disk's free clusters for a text string you enter in the dialog box. The first cluster that matches your string appears in the Cluster Viewer. You can add this cluster or display the next one containing the text string.

Enter Cluster #: Lets you specify a cluster number to add to the list. This can be useful as a starting point if you know approximately where the file is on the disk.

3. Once cluster numbers are displayed in the List of Added Clusters, you can modify the list.



Move: Lets you use ↑, ↓, Home, End, Pg Up, and Pg Dn to move the highlighted cluster to a new place in the list.

Delete: Removes the highlighted cluster from the list.

4. When the list includes the clusters you want in the file, in proper order, choose **OK**.

Purging Deleted Files

When you configure the Delete Sentry method of delete protection using Data Monitor, you can specify how many days to save deleted files and a maximum percentage of disk space to allow for Delete Sentry's hidden directory. Delete Sentry files are purged automatically when these limits are reached or when DOS needs the disk space they occupy. When Delete Sentry purges files, it removes the oldest deleted files first. See the *Data Monitor* chapter in this part for more information about Delete Sentry and how to configure it.

You can also use Undelete to purge all or selected deleted files that are protected by Delete Sentry, Delete Tracker, NetWare, and DelWatch. This does not change the free space actually available on your disk, since these methods allow DOS to use its disk space when needed. However, purging files does create more room for protected files, especially when disk space is at a premium.

If one of these methods is not currently protecting files on the current drive, the Purge Deleted Files command will be dimmed in the File menu and you cannot select it.

WARNING Once you purge files, other files can overwrite their data, and you may not be able to recover them.

Purging All Files

1. Choose **Purge Deleted Files** from the File menu.
2. In the submenu that appears, choose which type of protected files to purge.
3. In the Purge File dialog box, choose **Purge All**.

   Undelete removes all files on the current drive protected by the selected method.

NOTE *Purging NetWare files on a large file server may be slow.*

Purging Selected Files

1. From the Undelete directory tree and file list, select the files you want to purge.

   You can purge all files except those protected by DOS.
2. Choose **Purge Deleted File** from the File menu.

3. In the submenu that appears, choose the type of protected files to purge.
4. In the Purge File dialog box, choose **Purge**.

   If any of the files you select cannot be purged or do not match the protection type you selected, that file selection will be ignored.

How the Delete Protection Method Affects File Recovery

Undelete can recover files by using information saved by Delete Tracker, Delete Sentry, Mirror, Novell NetWare's method of delete protection, and DR DOS's DelWatch. If none of these were used, Undelete uses information available through DOS. The way a file was protected when it was deleted and whether or not you have a recent Mirror file, determine how successfully you will be able to undelete it. Delete Sentry is the most reliable; the DOS method without Mirror is the least reliable.

To configure PC Tools delete protection, use Data Monitor. See the *Data Monitor* chapter. For information about Mirror, see the *Mirror* chapter in this part.

Undeleting Files without Delete Protection

When you delete a file without PC Tools delete protection installed, DOS leaves the data on the disk; but in the File Allocation Table (FAT), it marks all the clusters used by the file as available. DOS replaces the first character of the deleted file's name with a special character that tells DOS not to include the deleted file in the directory listing. This means that you can no longer find that file using DOS.

The file's data remains on the disk and can be undeleted until DOS overwrites it. Since the deleted file's clusters are no longer allocated in the FAT, DOS may use those now-free clusters for expanding or creating a file. Fortunately, a deleted file's clusters are likely to remain intact for a while, since DOS usually looks beyond the last-saved data cluster for the next available disk space before it uses deleted-file clusters.

DOS keeps a record of a deleted file's name (with its first character replaced by the special character), its starting cluster, and how many clusters belonged to the file. This information alone may not be enough to undelete the correct data, since the clusters belonging to a file may be scattered about the disk.

However, if you have a recent Mirror file, turn on the **Use Mirror File** option from the Options menu so Undelete will use Mirror's copy of the FAT to locate all the clusters that belonged to the file when the Mirror copy was made. This increases the accuracy of the file's assigned condition, and improves the chances of recovering all its data, since a recent location of its fragmented clusters is known. For guidelines to interpreting the status of Mirror-protected and DOS-deleted files, see the next section, "Undeleting Files Protected by Delete Tracker."

Here's a guide to interpreting the status of a file that was deleted without delete protection and without a Mirror copy of the FAT, based on the condition assigned to it by Undelete:

- **Excellent:** There are enough contiguous (sequential) free clusters following the starting cluster to rebuild the file. If the original file was unfragmented, this group of contiguous clusters contains its data and you can **Undelete** it automatically. If the file was fragmented, use **Manual Undelete** to look for its data elsewhere on the disk. More information follows this list.

  Regular use of Compress keeps files unfragmented, which increases your chances of automatically undeleting DOS-deleted files. See the *Compress* chapter.

- **Good:** If the file's starting cluster is available, but there are not enough contiguous free clusters following the starting cluster to rebuild a multiple-cluster file, Undelete assumes that one or more of the file's clusters are in use by other files and reduces its condition to Good. You can use **View File** to see what would be undeleted automatically. If data is missing, look for it elsewhere on the disk with **Manual Undelete**.

- **Poor:** The file's starting cluster is in use by another file. Use **Undelete to**, which copies to another drive all the clusters that Undelete assumes belonged to the original file, whether they are in use or not. Then you can examine the file to see if any of its original data was recovered. If more than the beginning of the file is missing, use one of the Advanced Undelete methods to look for the file's data elsewhere on the disk.

- **Destroyed:** The file's first cluster and enough contiguous clusters to rebuild it are in use by other files. However, since DOS does not keep track of all the clusters of deleted files, some of the data may still be on the disk if the file was fragmented. The missing data may be found by using one of the Advanced Undelete methods or by scanning the disk for deleted data.

If you do not know whether the original file was fragmented, you may want to use **View File** or **Undelete to**, and examine the file to see if it contains the data you expect. If not, use **Manual Undelete** and look for the file's original clusters; if the file was fragmented, you may be able to find the missing data elsewhere on the disk.

It is possible that some of the data in the available clusters of a DOS-protected file may be overwritten, even if the file's condition is Excellent or Good. See "When Data May Be Overwritten," later in this chapter.

NOTE *The condition assigned to a file listed as protected by DOS will be most accurate if you compress your disk and run Mirror regularly. See the* Compress *and* Mirror *chapters in this part.*

Undeleting Files Protected by Delete Tracker

The Delete Tracker method of delete protection creates a hidden file named PCTRACKR.DEL in the root directory of the protected drive. It intercepts the DOS DEL command. In the PCTRACKR.DEL hidden file, Delete Tracker stores the name of the deleted file and the location of all the clusters it occupied. DOS then completes the delete operation and changes the FAT to indicate that the file is deleted and its clusters are available.

If Delete Tracker was active when the file was deleted, Undelete will use information saved in the hidden file to find and evaluate all the deleted file's clusters.

Here's a guide to interpreting the status of a deleted file protected by Delete Tracker (or by Mirror), based on the condition assigned to it by Undelete:

- **Excellent:** All of the original clusters for this file are available. Recover it automatically with **Undelete**.
- **Good:** The file's starting cluster is available. However, one or more of its remaining original clusters is currently in use by another file.
- **Poor:** The file's starting cluster is currently in use by another file.
- **Destroyed:** All of the file's clusters are in use by other files. Most likely, Undelete cannot recover any of it.

For Good, Poor, and Destroyed files protected by Delete Tracker, you may want to use **Undelete to**, which copies to another drive all the clusters that belonged to the original file, whether those clusters are currently in use by another file or not. You can then examine the file to see how much of the original data was recovered.

Even if the file's condition is Excellent, Good, or Poor, some of the data in the available clusters of a file protected by Delete Tracker may be overwritten, as described next. Before recovering the file, you can use **Manual Undelete** to remove any overwritten clusters.

When Data May Be Overwritten

Files protected by Delete Tracker or DOS that have a condition of Excellent, Good, or Poor may contain some overwritten data in their available clusters.

Undelete can determine only if a file's clusters are currently in use by another file. It has no way of determining if that file's data has been overwritten by another file that has also been deleted, which makes those clusters available once again. For example, many programs write to temporary files that are deleted when you exit from the program. These temporary files may overwrite the same clusters that were occupied by other deleted files. For this reason, you should undelete files protected by Delete Tracker or DOS as soon as possible after deleting them.

Undeleting Files Protected by Delete Sentry

The Delete Sentry method of delete protection creates a hidden directory named \SENTRY off the root directory of the protected drive. It intercepts the DOS DEL command and moves the deleted file to this directory without changing the record of the file's location stored in the FAT—effectively changing the path to the file but not its physical location. As far as DOS is concerned, the file has been moved. The file's clusters are still allocated in the FAT and are protected from being overwritten by DOS. Undelete can find the file in Delete Sentry's hidden directory.

If Delete Sentry was active when the file was deleted, Undelete can recover the complete file in Perfect condition. However, Delete Sentry files are purged automatically when limits set in Data Monitor are reached or when DOS needs the disk space occupied by Delete Sentry files. In that case, or if you purge Delete Sentry files using Undelete, those files can be undeleted only through DOS information.

Please refer to the documentation accompanying DR DOS and Novell NetWare 386 for details of those methods.

Command-Line Options

Use the following command syntax at the DOS prompt:

```
UNDEL    [d:] [\path] [\filename]
  [/S or /DT or /EP or /NW or /DW or /DOS or /ALL]
  [/NC] [/NM] [/LIST] [PURGE] [PURGEALL]
  [/? or /HELP] [/VIDEO]
```

NOTE *There are additional command-line options that you can use to control program display and mouse operation. See the* Global PC Tools Command-Line Options *chapter in* Part 4 General Reference *in this volume or type* `UNDEL /VIDEO`.

Option	Description
d:	The drive from which you want to undelete files or directories. Default: current drive.
\path	The DOS path of the file or directory to undelete. Default: current directory.
\filename	Any DOS file name. DOS wildcards * and ? can be used. Default: *.*
/S or /SENTRY	Undeletes only files protected by the Delete Sentry method of delete protection.
/DT or /TRACKER	Undeletes only files protected by the Delete Tracker method of delete protection.
/NW	Undeletes only files protected by the Novell NetWare 386 method of delete protection.
/DW	Undeletes only files protected by the DR DOS method of delete protection, DelWatch.
/DOS	Undeletes only files protected by DOS.
/ALL	Undeletes files protected by all methods (default).
/NC	Undeletes the specified files without asking for confirmation for each file.
/LIST	Lists the deleted files in the specified directory; does not undelete.
/NM	Tells Undelete not to look at Mirror file information when undeleting a file listed as protected by DOS.
/PURGE	Purges deleted files that can be purged in the specified directory. (Undelete cannot purge DOS-protected files.) If no method is specified, this command purges all deleted files in the directory. This option uses *path* and *filename* specs.

Continued

Option	Description
/PURGEALL	Purges deleted files that can be purged on the specified drive. (Undelete cannot purge DOS-protected files.) If no method is specified, this command purges all deleted files on the drive.
/? or /HELP	Displays command-line help for Undelete options.
/VIDEO	Displays command-line help for Undelete's display and mouse options.

Examples

```
UNDEL \DBASE\*.DBF
```

This command undeletes all the deleted database files (*.DBF), protected by all methods, in the \DBASE directory on the current drive. You will be prompted to undelete each file.

```
UNDEL C:\SAMPLE
```

This command undeletes the \SAMPLE directory on drive C. (You could type `UNDEL C:\SAMPLE\*.*` to undelete all the deleted files in that directory.)

```
UNDEL \AR\JULY /S/NC
```

This command undeletes all the files in the \JULY subdirectory of the \AR directory that were protected by Delete Sentry, without asking whether you want to undelete each file.

```
UNDEL D:\MEMO /LIST
```

This command lists all the deleted files in the \MEMO directory on drive D, no matter what protection method you used.

```
UNDEL D:\MEMO /S /PURGE
```

This command purges all the deleted files protected by Delete Sentry that can be purged in the \MEMO directory on drive D.

DiskFix

DiskFix is a simple-to-use utility that repairs most disk problems. Used with Mirror and the emergency disk, DiskFix provides almost perfect data recovery from the most serious damage. As a preventive maintenance tool, DiskFix can detect and prevent potential problems before they occur.

Here's what you'll find in this chapter:

- **Before You Use DiskFix** explains why you need to keep the emergency disk up-to-date and remove memory-resident software before using DiskFix. This section also explains how to use DiskFix optimally.
- **Starting DiskFix** explains how to start DiskFix and describes features of the main window.
- **Repairing a Disk** explains how DiskFix repairs corruption that might cause problems booting (starting) your computer or accessing a disk drive—for example, damage to the CMOS information, partition tables or boot sectors. It also corrects errors in the file system such as cross-linked files, lost cluster chains, and invalid directory entries.
- **Undoing a DiskFix Repair** explains how to use saved information to undo a DiskFix repair.
- **Surface Scan** explains how DiskFix repairs hard disk read and write errors.
- **Revitalizing a Disk** explains how DiskFix can revitalize disks that DOS is having trouble reading or writing to.
- **Configuring DiskFix Options** explains the options you can configure.
- **Command-Line Options** describes the DiskFix command-line options.

Before You Use DiskFix

If you need to repair problems and have not installed PC Tools, you can run DiskFix from the original floppy disk or a working copy of it.

WARNING Do not copy DiskFix to the disk that is having problems; this could result in data loss.

If your computer won't boot (start) when you turn it on, boot from a floppy disk that has DOS installed on it—for example, the emergency disk you made when you installed PC Tools (see the *Build Emergency Disk* chapter in this part).

Keep Your Emergency Disk Up-to-Date

An emergency disk is necessary if you cannot start your system, for example, if your boot sector was changed by a virus, or your partition table or CMOS memory was damaged. Any time you add a new physical drive to your system, or use FDISK to change partition information, or add disk compression software such as Stacker, SuperStor or DoubleDisk, or change the number of logical drives, run the Build Emergency Disk utility and make a new emergency disk.

If you can't boot from your hard drive, DiskFix may ask for your emergency disk to restore the data you saved in the PARTNSAV.FIL file. This file is stored on the emergency disk and contains data that replaces damaged CMOS, partition table, and boot sector information with valid data.

WARNING Do not use the emergency disk to restore partition table and boot sector information from one computer onto another. These images are unique from system to system and are not compatible, so you will have the wrong one.

Remove Memory-Resident Software

Central Point programs and mouse drivers are safe to use with DiskFix. However, before you start DiskFix, you should unload other memory-resident programs that could access the disk during disk repair, including the DOS utilities FASTOPEN and SmartDrive. An easy way to do this is to boot the computer from the emergency disk.

If you have Central Point memory-resident programs loaded and do not have enough memory to run DiskFix, remove some of those programs and run DiskFix again.

WARNING Before using DiskFix, you *must* unload from memory any disk-caching program other than PC-Cache, SmartDrive version 3.x and 4.x, or Super PC-Kwik. DiskFix detects the presence of these disk caches and turns them off. Failure to turn off other cache programs could result in data loss or loss of access to the disk.

Using DiskFix Optimally

- Create an emergency disk using the Build Emergency Disk utility. This saves valuable information for DiskFix to use in recovery such as an image of the partition tables, boot sectors and CMOS information.
- Use CP Backup regularly. Backups are your best insurance against data loss.
- Run Mirror from your AUTOEXEC.BAT file for every drive.
- Use DiskFix any time you have a problem with a disk drive. If your computer won't start, boot it with the emergency disk, and run DiskFix from the emergency disk.

Starting DiskFix

If you have a problem with your system and the computer won't start, use the emergency disk you created during install to start your computer and run DiskFix from the emergency disk.

1. Choose **DiskFix** from the Tools menu in PC Tools Desktop.

   or

   From DOS, type one of these commands:

If You Have	Then Type
No cache card	`DISKFIX` Enter
Hardcache card from CompuAdd	`DISKFIX /HCACHE` Enter
HardCard card from Plus Development Systems	`DISKFIX /HCARD` Enter

   If a password has been assigned, enter it and choose **OK**.

   A warning dialog box reminds you to remove memory-resident programs other than Central Point programs from memory.

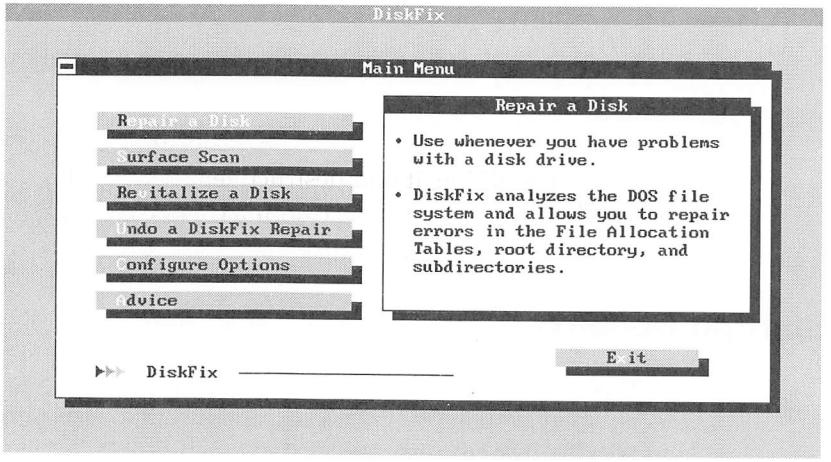
2. When you are ready to use DiskFix, choose **OK**.

   DiskFix performs an extensive analysis of the partition tables and logical boot sectors of all hard disks to ensure that DOS is accessing every drive correctly.

   If DiskFix finds any problems during this initial testing, an error dialog box describes the problem and allows you to repair it or cancel. If DiskFix finds a virus, it advises you to use Central Point Anti-Virus to remove the virus before trying DiskFix again.

   If you need to make a repair, refer to step 4 of the procedure in "Repairing a Disk," later in this chapter.

   Only when DiskFix determines that all partition and boot information is accurate will it allow you to proceed to the main window.


DiskFix
Main Menu
Repair a Disk
urface Scan
Re italize a Disk
ndo a DiskFix Repair
onfigure Options
dvice
Repair a Disk
• Use whenever you have problems with a disk drive.
• DiskFix analyzes the DOS file system and allows you to repair errors in the File Allocation Tables, root directory, and subdirectories.
E it
DiskFix

What You See

The DiskFix main window contains the following options:

Repair a Disk: Should be your *first choice* whenever you experience problems accessing a drive or the data on the drive. This includes failure to boot, cross-linked files, lost clusters, and allocation errors.

NOTE *If you are running under a multi-tasking environment such as Task Switcher, Windows, or DESQview, you can use the Repair a Disk option of DiskFix to analyze a drive and get a report of that analysis. If you are using DOS 3.3 or later, you can use PC Tools Scheduler for Windows to run DiskFix at regular intervals in the background to analyze specified drives and inform you of any errors. However, DiskFix will not let you make any repairs. Making repairs while a multi-tasking program is running could result in data loss. To correct any errors found, exit from Task Switcher, Windows, or DESQview completely and run DiskFix from the DOS prompt.*

Surface Scan: Used whenever you experience read or write errors and also as a preventive maintenance tool to prevent data loss due to media defects.

Surface Scan removes damaged sectors from use so they can no longer store data. DiskFix can often repair data that is already damaged and will move it to a safe location when necessary. Surface Scan can also optionally perform pattern testing, an extremely thorough media-surface analysis.

For regular preventive maintenance, use Surface Scan without pattern testing. Do *not* use a pattern-testing option unless the drive is experiencing read or write errors that persist after performing a Read/Write Only scan.

Revitalize a Disk: Use when read/write errors occur in the system area of a disk (the File Allocation Table (FAT), boot sector, or root directory), when you need to retrieve data from a damaged floppy disk that you were unable to retrieve with Surface Scan, or when you want to change the sector interleave on your hard disk.

NOTE *Do not use Revitalize a Disk to correct errors or retrieve data unless you have already tried Surface Scan.*

Revitalize a Disk performs the same kinds of media-surface analysis as Surface Scan. In addition, it non-destructively, low-level formats the selected drive. While doing so, it can also optimize the performance of your disk drive by allowing you to select the most efficient sector interleave (the physical order in which data is stored). The disk retains all data.

Many newer hard disks and controllers use technology that already provides for maximum performance and do not permit non-destructive, low-level formatting. DiskFix always tells you when it discovers one of these drives and will not let you continue with the Revitalize a Disk process. The messages vary and are specific to each configuration. You can use Surface Scan instead.

WARNING Do not low-level format a drive with Stacker or SuperStor drivers installed. These drives are, in fact, files containing drive information, and a low-level format can destroy the drive information.

Undo a DiskFix Repair: Allows you to restore a drive to the condition it was in before DiskFix made any repairs. You must have saved the original disk information during a repair process to undo the repair.

Configure DiskFix: Lets you customize DiskFix testing, scanning, and repair options.

Advice: Displays a troubleshooting guide where you can look up DOS or CHKDSK error messages or general disk problems for advice about what to do. This information is also available in the *Troubleshooting Data Recovery and System Utilities* chapter in this part.

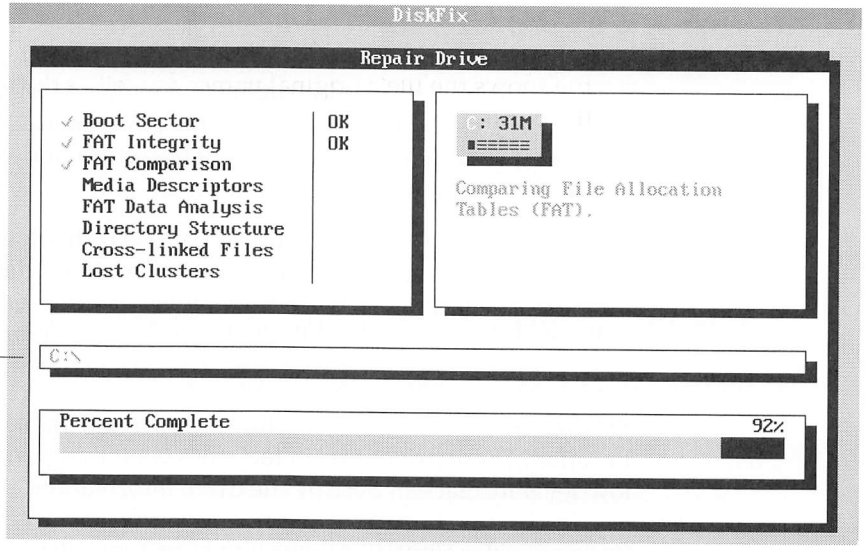
Repairing a Disk

1. Choose **Repair a Disk** from the DiskFix main menu.
2. Select the drive you want to repair.
3. Choose **OK** to begin analyzing the selected drive.

   Go to step 4 if DiskFix finds an error.

   The Repair Drive dialog box keeps you informed as DiskFix runs through its battery of tests. The path box shows the drive and directory being analyzed.

   Although individual categories of testing and their results appear in the Repair Drive window, this is a much-simplified representation of the DiskFix analysis. For example, errors in the File Allocation Tables are not completely fixed until any directory errors are also fixed and vice versa.



Boot Sector: Checks information DOS needs to access the file system correctly.

FAT Integrity: Verifies that all copies of the File Allocation Table are readable. If errors are found, DiskFix tries to write the readable copy of the FAT over the unreadable copy.

FAT Comparison: Verifies that both copies of the FAT are identical. If DiskFix finds differences, it determines which one has fewest errors and uses it. DiskFix checks any Mirror information it finds to ensure that the FAT and root directory with the fewest errors are used for data recovery.

NOTE *Always use Mirror on every hard disk drive. The combination of Mirror and DiskFix, used together, provides the best data recovery protection possible. Do not, however, use outdated Mirror information. Restoring invalid information can be worse than not using it. The option to use the Mirror file can be configured. See "Configuring DiskFix Options" later in this chapter.*

Media Descriptors: Verifies that the media-descriptor bytes in both FATs are correct for this drive. The media descriptor is a special byte in the FAT that identifies the disk type.

FAT Data Analysis: Checks for invalid entries in the FAT. When DiskFix completes this test, both FATs are identical and contain only DOS-acceptable values.

Directory Structure: Checks every entry in every directory on the disk for any kind of damage, such as invalid file names or sizes, file allocation errors, or duplicate file names. If it finds duplicate file names, the report file shows the file's original names as well as the names DiskFix assigns to the duplicates.

Cross-linked Files: Looks for files that have been allocated the same storage space according to the FAT. DiskFix tries to determine what clusters belong to which file. Repairing cross-linked files can take several minutes.

Lost Clusters: Looks for clusters marked as "in use" in the FAT but not allocated to any file in the directory structure.

If DiskFix finds an error, you can repair it by following the instructions in the error dialog box.

4. Choose **Repair** (or the appropriate button).

   In some cases (if there is damage to the boot sector, CMOS, or partition table), DiskFix may ask for the emergency disk to use the information recorded in the PARTNSAV.FIL. If you do not have an emergency disk, or a current version of one, DiskFix attempts to repair the damage from the data left on the disk, which may not be as reliable. Always keep a current version of your emergency disk available. See the *Build Emergency Disk* chapter in this part for more information.

If you selected **Enable Option to Fix Manually** in the Configure DiskFix dialog box, a second dialog box appears with options to fix the error manually or automatically. If you are experienced with disk editors, select the **Manual** button to run DiskEdit and repair the problem yourself. To have DiskFix fix the problem for you, select **Auto**. When the problem is repaired, DiskEdit displays the DOS prompt; run DiskFix again.

The first time you repair a disk, DiskFix asks if you want to save the current information to another disk so you can undo the repair if necessary.

NOTE *If you do not select an "undo" drive the first time you make a repair, you will not have another opportunity to save current disk information during this session.*

- Select the drive on which you want DiskFix to save the original disk information. Use a floppy drive; insert a formatted floppy disk into the drive before selecting it from the list.
- Choose **OK** to copy the original information to the alternate disk and begin the repair.

  or

  Choose **Skip** to begin the repair without saving undo information.

A dialog box lets you know repairs are taking place. Then the Repair Drive window shows that the damage has been fixed.

5. If DiskFix finds lost clusters, use the following guidelines to decide what you want DiskFix to do with them.

   Lost clusters are storage areas marked as "in use" in the FAT but not assigned to any file. DOS cannot read the data in a lost cluster, and the cluster is not available to store new data.

   Save: Saves lost clusters as PCT*nnnnn*.FIX files in the root directory. Converting lost clusters to files restores access to their data. You can examine the recovered clusters and rename them by using FileFind (see the *FileFind* chapter).

   If the lost cluster was a directory, **Save** restores the entire directory and all its files. Only the directory name is lost. DiskFix places a recovered directory in the root directory and names it LOST*nnnn*.SUB. All the original file names are intact and you can list them with the DOS DIR command. Use Directory Maintenance to rename the lost directory to its original name and path (see the *Directory Maintenance* chapter in this part).

   Delete: Removes lost clusters. Be certain you don't need any of the data that might be in them.

Ignore: Leaves lost clusters as they are—allocated but unavailable.

NOTE *If you repaired a problem in the boot sector, reboot when DiskFix is done and run DiskFix again with the Repair a Disk option to make sure everything works.*

6. When the analysis and any repairs are complete, choose **OK** to generate a report of any errors and actions taken. (**Skip** returns you to the DiskFix main menu without a report.)

   You may send the report to the LPT1 **Printer** or save it as a text **File** on disk. The default report file is DISKFIX.RPT in the DiskFix directory, but you can enter a new path and file name.

   When the disk repair process is complete, the DiskFix main menu reappears.

Undoing a DiskFix Repair

To undo a DiskFix repair, you must have saved the original disk information on another disk.

Saving "Undo" Information

The first time you choose to repair an error that DiskFix finds, it allows you to make a copy of all affected data before making any corrections. If you decide to save this "undo" information, save it on a floppy disk.

If you do not select an "undo" drive the first time you make a repair, you will not have another opportunity to save current disk information during this session.

Undoing a Repair

If you requested a DiskFix repair and you saved the original "undo" information, you can later restore your disk to the state it was in before you used DiskFix.

NOTE *If you are running DiskFix remotely from Commute, or another remote control program, the Undo a DiskFix Repair option is dimmed and you cannot select it. DiskFix disables this option because is not safe to perform low-level disk operations remotely.*

1. From the main DiskFix window, choose **Undo a DiskFix Repair**.
2. Select the drive on which you previously saved the original disk information.

   If it is a floppy disk, insert it into the drive before selecting that drive from the list.

3. Choose **OK**.

   DiskFix restores the disk to its unfixed state, as recorded on the "undo" disk. When your disk is restored, the DiskFix main menu reappears.

Surface Scan

Use Surface Scan for regular preventive maintenance and to repair read and write errors.

NOTE *If you are running DiskFix remotely from Commute, or another remote control program, the Surface Scan option is dimmed and cannot be selected. DiskFix disables this option because is not safe to perform low-level disk operations remotely.*

Before you start, configure the type of surface scan to use. The default scan accommodates the greatest combination of hard disks, controllers, and computer equipment. However, you can select a BIOS scan that can, in some cases, completely recover data from defective sectors that would otherwise be lost. See "Configuring DiskFix Options," later in this chapter.

1. Choose **Surface Scan** from the DiskFix main menu.
2. Select the drive you want to scan and choose **OK**.

Selecting a Pattern-Testing option

If you selected a floppy drive, skip this section and proceed directly to "Scanning and Repairing the Selected Drive."

DiskFix always reads and writes all the data on the selected drive to find and repair surface defects. When necessary, you can select a pattern-testing option that will apply a number of test patterns to hard disks while carrying out the read/write testing.

NOTE *For regular preventive maintenance, select the Read/Write Only option. Do* not *use a pattern-testing option unless the drive is experiencing read or write errors that persist after performing a Read/Write Only scan.*

When read/write errors occur in the system area of a disk (the File Allocation Table (FAT), boot sector, or root directory) or when you need to retrieve data from a damaged floppy disk that you were unable to retrieve with Surface Scan, use Revitalize a Disk (see "Revitalizing a Disk" later in this chapter). However, if your hard drive does not permit revitalization, you can use Surface Scan and start with Minimum Pattern Testing (unless otherwise instructed below). All pattern-testing options include the read/write operation.

- In the Pattern-Testing options dialog box, select one of the pattern-testing options and choose **OK**.

Read/Write Only – No Pattern Testing: Reads and writes all data on the drive. Any defective sectors found are marked as "bad" in the File Allocation Table so that they can no longer be used by DOS to store data. Data that was in a defective sector is moved to a safe location. This option takes only a few minutes on a 20MB partition.

If the BIOS scan configuration option is selected, DiskFix will repair correctable data errors as it reads and writes the data.

Since DiskFix reads and writes all the data (an active scan), rather than just reading data (a passive scan), the data is realigned with the drive heads as it is rewritten to the disk. (Over time, drive heads may drift from their original positions, which makes the data harder to read. This phenomenon is referred to as "track drift," and DiskFix corrects it.)

Minimum Pattern Testing: Reads and writes 20 test patterns to the disk to spot *most* flaws not detectable with a Read/Write Only scan. Do not use this option unless a Read/Write Only scan has not repaired known read or write errors.

Average Pattern Testing: Reads and writes 40 test patterns to the disk. Do not use this option unless you have tried using a Read/Write Only scan and the Minimum Pattern-Testing options first and they have not repaired your problem.

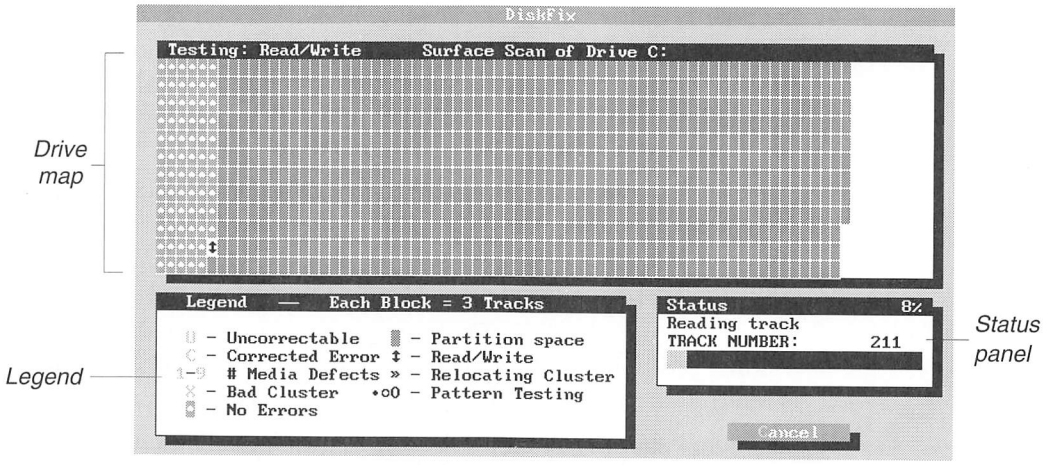
Maximum Pattern Testing: Reads and writes 80 test patterns to the disk. This option could take hours to complete on some drives. Do not use this option unless you have first tried a Read/Write Only scan, the Minimum Pattern Testing, and the Average Pattern-Testing options and they have not repaired the problem. *Never* use this option on a regular basis; you should use it only if you have tried the other pattern-testing options and your problem persists. Regular use of the Maximum Pattern-Testing option could make your drive unusable.

WARNING Do not use Maximum Pattern Testing on RLL drives; the drive configuration is not compatible and may result is data loss.

Scanning and Repairing the Selected Drive

After you choose a pattern-testing option (or select a floppy disk drive), the Surface Scan drive map appears and the scanning process begins.

NOTE *If DiskFix is interrupted by a power failure or some other event out of your control while scanning and repair activity is underway, run DiskFix as soon as you can reboot your computer. If your hard disk won't boot, boot from a floppy disk that has DOS installed on it (for example, the emergency disk) and start DiskFix from it or from the original floppy disk. DiskFix will attempt to repair any damage done by the accidental interruption.*



Drive map: Displays a graphic representation that lets you follow the automatic disk scanning as it proceeds. DiskFix reads and writes all the data on the drive and repairs any defects it finds automatically. As the scanning activity progresses, the map fills with symbols that show the status of each map block. The map title bar includes the pattern-testing option in effect and which drive is being scanned.

Status panel: Lets you know what activity is being performed on which data track, and what percentage of the process is complete.

Legend: Identifies the symbols on the drive map (see "Surface Scan Symbols" following for a full description of each symbol). The Legend title bar tells you how many data tracks that each symbol represents.

If you choose **Cancel** in the drive map window, choose **OK** to resume or **Cancel** to return to the DiskFix main menu. No matter which you choose, the activity up to that point is saved. If you cancel, you may print the Surface Scan log report so you can keep a record of all activity to that point. See the section, "Using the Log Report" later in this chapter.

Surface Scan Symbols

The following drive map symbols indicate the current activity:

Symbol	Legend	What It Means
▒	**Partition Space**	This block of space has not been scanned. Partition space symbols show how much of the drive map represents the selected drive.
C	**Read/Write**	This block is being read from or written to.
»	**Relocating Cluster**	A surface defect is in an area that is in use. The affected data is being moved to a pre-tested safe location. The cluster(s) containing the defective sector(s) are being marked as "bad" in the File Allocation Table (FAT) to prevent future use.
o00	**Pattern Testing**	A number of test patterns are being applied to this block of tracks to uncover a deeper level of media damage than read/write testing can detect.

The following drive map symbols indicate the results of Surface Scan activity. The symbols are listed in the table in their order of seriousness.

If more than one error occurs within the block of tracks represented by one symbol on the drive map, DiskFix displays the symbol representing the most serious defect.

Symbol	Legend	What It Means
U	**Uncorrectable**	An uncorrectable data error was found. *You should check the log report when Surface Scan is done to see what file(s), if any, are affected.* A capital "U" means the uncorrectable data was in a sector that is currently in use and the error is therefore of concern; a lowercase "u" means the uncorrectable data was in a sector not currently in use. If a sector in use is found to be defective, recoverable data is moved to a safe location, and the cluster containing that sector is marked as "bad" in the File Allocation Table.
C	**Corrected Error**	A data error was found and corrected. This symbol is for your information only. Since the data has been corrected, you do not need to do anything more. A capital "C" means the sector is in use; a lowercase "c" means the sector is not in use. If a sector in use is found to be defective, recoverable data is moved to a safe location and the cluster containing that sector is marked as bad in the FAT.
1 - 9	**# Media Defects**	Defective sectors are in an unused area, or sectors in use are defective but their data is intact. This symbol is for your information only; you do not need to do anything about it. The number displayed in the block ("1" through "9") is the number of defects found. A "9" means nine or more defects. Check the log report for details.
X	**Bad Cluster**	This area of the disk contains a cluster already marked as bad in the FAT. Since the cluster is already locked out from use, DiskFix has left its sectors alone.
	No Errors	No errors were found in this block of tracks.

TIP *You can check the log report (default name DISKFIX.LOG, in the root directory of the drive being scanned) to find out if any defect other than the one displayed was found in a block of tracks.*

Using the Log Report

As DiskFix scans and repairs your disk, it logs its activity in a log report file. The log includes a description of each activity, what defects were found, and how they were repaired.

When the scanning and repairing activity is finished (or if you cancel), DiskFix asks if you'd like a log report of actions taken.

- Choose **OK** to get a log report.

  Send the log report to the LPT1 **Printer** or save it as a text **File** on disk. The default log report file is DISKFIX.LOG, located in the root directory, but you can change the file's path and file name.

  or

  Choose **Skip** to display the DiskFix main menu without a log report.

  After you choose whether you want a report, the DiskFix main menu reappears.

Uncorrectable data errors are marked with a "U" symbol on the drive map and details are listed in the log report. After Surface Scan is finished, you should look up any uncorrectable errors in the log report to see what file(s) are affected so you can decide what to do about them.

For example, if an uncorrectable data error happens to be in an .EXE file, running the damaged program could further damage your disk, so you should reinstall that file from its original disk.

Revitalizing a Disk

Revitalize a Disk is a powerful disk repair tool that performs a surface scan, described in the previous section, plus a non-destructive, low-level format of the selected drive. This tool can also optimize the performance of your disk drive by allowing you to select the most efficient sector interleave (the physical order in which data is stored).

Most drives made today are IDE drives and don't need to be revitalized. In fact, MFM and RLL drives are the only types of drives that *can* be revitalized. If a disk has known read or write errors, always try Surface Scan before using Revitalize a Disk.

NOTE *You do* not *need to use Revitalize a Disk unless read or write errors occur in the system area of a disk (the File Allocation Table, boot sector, or root directory), you need to retrieve data from a damaged floppy disk that you were unable to retrieve with Surface Scan, or you want to change the sector interleave on your hard disk.*

Revitalize a Disk always uses a BIOS type of surface scan, whether or not you have configured that type of scan for use by the Surface Scan option. If your combination of hard disk, controller, and computer equipment can be revitalized (low-level formatted), it will also allow a BIOS scan. This type of scan is best when possible because it affords a greater chance of data recovery than the default scan. See "Configuring DiskFix Options," later in this chapter.

NOTE *If you are running DiskFix remotely from Commute, or another remote control program, the Revitalize a Disk option is dimmed and cannot be selected. DiskFix disables this option because is not safe to perform low-level disk operations remotely.*

1. Choose **Revitalize a Disk** from the DiskFix main menu.
2. Select the drive you want to revitalize and choose **OK**.

   DiskFix automatically begins gathering information it needs to revitalize the selected disk.

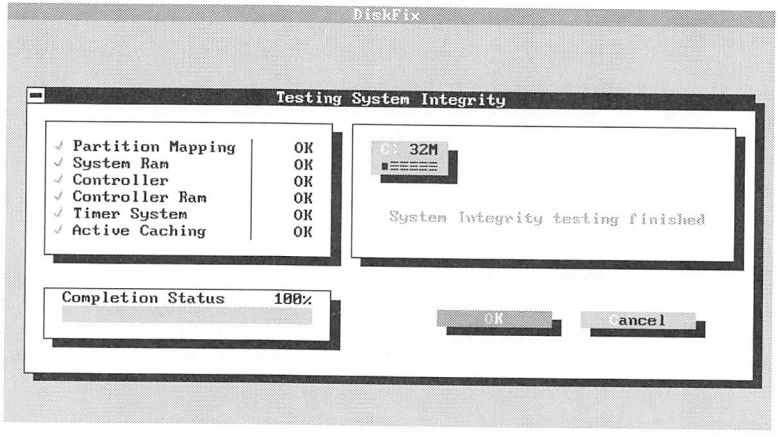
   These preliminary tests appear in three windows (each described on the following pages) titled:

   - Testing System Integrity
   - Testing Disk-Timing Characteristics
   - Determining Physical Options

   If you choose **Cancel** or press Esc, you interrupt the testing process as soon as the current test is complete.
3. When the set of tests in any of these windows is finished, choose **OK**.

Testing System Integrity

DiskFix tests the system to make sure there are no defects that could prevent it from successfully revitalizing the disk.



Partition Mapping: Verifies that the selected drive is a valid DOS partition.

System RAM: Ensures that the memory needed to perform the testing is in working order.

Controller: Verifies that the hard disk controller works.

Controller RAM: Verifies the integrity of the hard disk controller's on-board random access memory.

Timer System: Verifies that reliable computer timings can be taken.

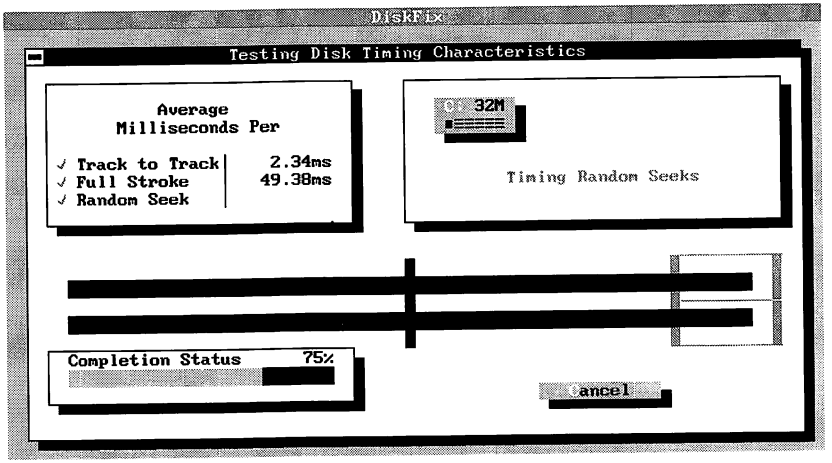
Active Caching: Checks to see if there is a hardware or software cache still active. (When DiskFix started, it turned off PC-Cache.)

NOTE *If the drive you selected is a floppy disk, this is the only set of tests that needs to be performed. When you choose OK, the drive map appears. Skip ahead to "Revitalizing the Selected Drive."*

Testing Disk-Timing Characteristics

Since hard disks are more complex than floppy disks, DiskFix needs to determine the disk-timing characteristics of a hard disk to revitalize it properly.

The average results of each test are shown in milliseconds. The graphic at the bottom of the window represents a spinning disk drive and shows the heads as they move across the disk while DiskFix performs each test.



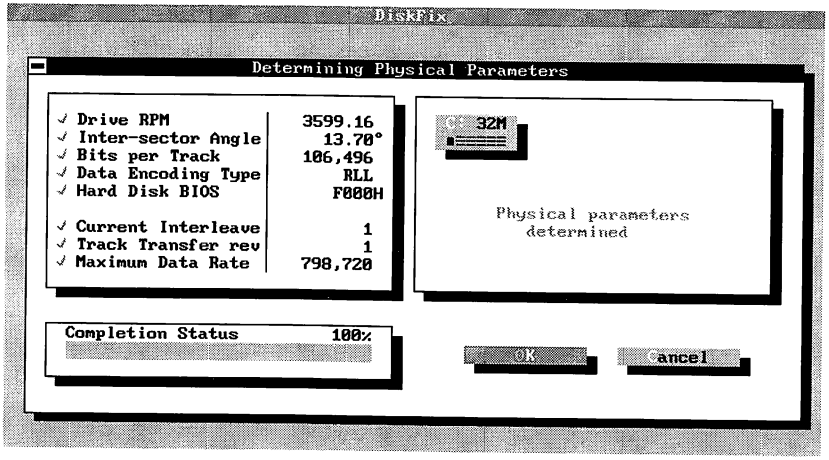
Track to Track: Tests the time it takes to move the head from one track to the next.

Full Stroke: Tests the time it takes to move the head from the first to the last track.

Random Seek: Determines the average time it takes to move the head from one track to another (sometimes called *access time*).

Determining Physical Options

Finally, DiskFix analyzes various hard disk physical options to get information it needs to perform a non-destructive, low-level format of a hard disk during the disk revitalization.



Drive RPM: The number of times per minute the disk revolves under the drive heads.

Inter-sector Angle: The physical angle of a single sector. (Sectors occupy pie-shaped sections of the physical disk surface.)

Bits per Track: The number of data bits each track contains.

Data Encoding Type: The scheme the controller uses to magnetically encode data on the surface of the disk.

Hard Disk BIOS: The address of the firmware used to access the hard disk.

Current Interleave: Corresponds to the interleave ratio. For example, "3" would indicate a 3:1 ratio (meaning the drive heads read every third sector as the disk spins under them).

Track Transfer rev: The number of disk revolutions needed to read or write one track of data.

Maximum Data Rate: The maximum number of bits per second that can be read or written with this drive.

Non-Destructive, Low-Level Formatting

The non-destructive, low-level formatting provided by Revitalize a Disk rewrites sector address markers on the selected drive without disturbing any of your data. Sector address markers can grow weak over time and cause read/write errors. By rewriting those markers, Revitalize a Disk allows you to continue using the disk with confidence.

When the entire preliminary testing process is finished, DiskFix knows whether your disk can be low-level formatted. If it can be, DiskFix analyzes the disk's interleave and gives you the opportunity to reset the interleave. See "Resetting the Interleave" later in this chapter for more information.

If preliminary testing discovers that your hard disk cannot be low-level formatted, DiskFix will not let you continue revitalizing that disk. (Most newer hard disks and controllers use technology that already provides for maximum performance and do not permit non-destructive, low-level formatting.)

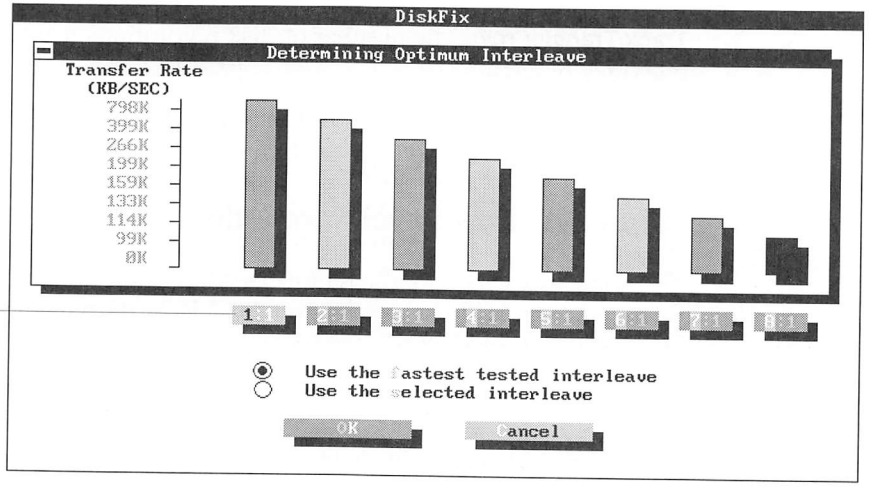
Repairing a Drive that Cannot be Low-Level Formatted

1. Choose **OK** to return to the DiskFix main menu.
2. Choose **Surface Scan** to correct read/write problems without low-level formatting the disk. See the "Surface Scan" section, earlier in this chapter.

Resetting the Interleave

The interleave determines the sequence in which sectors on the disk will be read. When a drive's current interleave is not optimum, resetting it to a more efficient ratio can improve hard disk performance.

If your hard disk can be non-destructively low-level formatted, DiskFix begins testing interleave ratios. A graph shows you the performance implications of each possibility.



1. When the optimum interleave testing finishes, select an interleave ratio.

   The current interleave is highlighted. You can keep the interleave at its current setting or, if the interleave is not optimum, you can reset it. For details, see the next section, "Optimum Interleave."

   ▶ Leave **Use the fastest tested interleave** selected, which is the default.

   or

   To keep your current interleave when it is not the fastest tested interleave, leave your current interleave highlighted and select the second option, **Use the selected interleave**.

   or

   You can highlight any interleave ratio you want to use and select the second option, **Use the selected interleave**.

   Central Point Software recommends that you use the fastest tested interleave.

2. Choose **OK**.

Optimum Interleave

Some hard disk drives cannot transfer information to and from the surface of the disk as fast as the disk revolves. For example, when the second sector passes under the read/write heads, the computer may not be finished processing information from the first sector. So, instead of numbering sectors to be read in physical sequence around the disk (1, 2, 3, etc.), the sectors are interleaved—that is, some number of physical sectors are skipped between each next sector the computer reads. For example, an interleave ratio of 3:1 would read a sector, skip two sectors, and read the third (1 – – 2 – – 3, etc.).

If the interleave ratio is set too low or too high, data will not be processed as quickly as possible. Too low an interleave means the computer won't be ready to process the next sector when it appears under the read/write heads and will have to wait for an extra disk revolution. Too high an interleave means the computer will be ready to process the next sector's data but will have to wait for it. Adjusting the interleave may improve performance.

The optimum interleave depends on a number of factors. DiskFix can determine the fastest interleave for your computer.

Selecting a Pattern-Testing Option

DiskFix always reads and writes all the data on the selected drive to find and repair surface defects. You can also select a pattern-testing option that will apply a number of test patterns to hard disks while carrying out the read/write testing. All pattern testing options include the read/write operation.

NOTE *Central Point Software recommends that you run Revitalize a Disk with the minimum pattern-testing option, unless otherwise instructed as follows.*

- In the Pattern-Testing options dialog box, select one of the pattern-testing options and choose **OK**.

  Read/Write Only – No Pattern Testing: Reads and writes all data on the drive, and repairs correctable errors. Any defective sectors found are marked as "bad" in the File Allocation Table so that they can no longer be used by DOS to store data. Data that was in a defective sector is moved to a safe location. This option takes only a few minutes on a 20MB partition.

  Since DiskFix reads and writes all the data (an active scan), rather than just reading data (a passive scan), the data is realigned with the drive heads as it is rewritten to the disk. (Over time, drive heads may drift from their original positions, which makes the data harder to read. This phenomenon is referred to as "track drift," and DiskFix corrects it.)

Minimum Pattern Testing: Reads and writes 20 test patterns to the disk to spot *most* flaws not detectable with a Read/Write Only scan. Do not use this option unless a Read/Write Only scan has not repaired known read or write errors.

Average Pattern Testing: Reads and writes 40 test patterns to the disk. Do not use this option unless you have tried using a Read/Write Only scan and the Minimum Patter Testing options first and they have not repaired your problem.

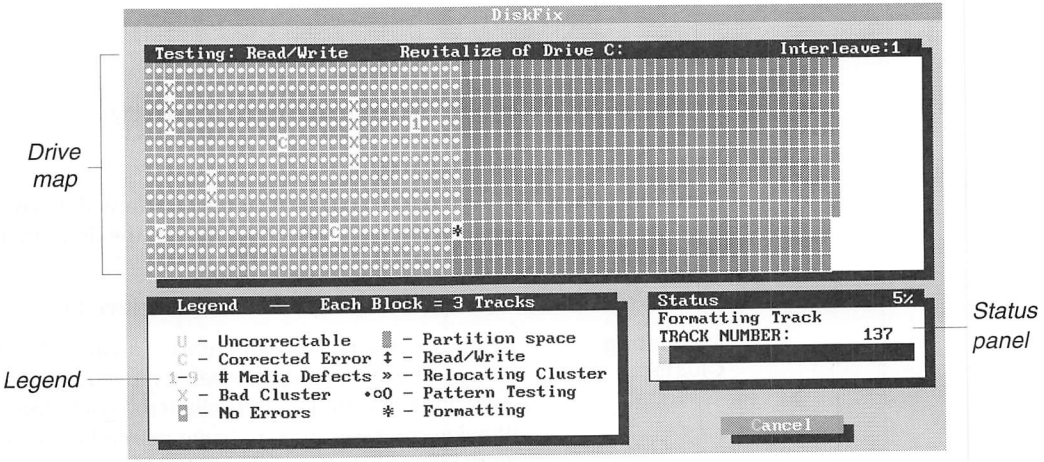
Maximum Pattern Testing: Reads and writes 80 test patterns to the disk. This option could take hours to complete on some drives. Do not use this option unless you have first tried a Read/Write Only scan, the Minimum Pattern Testing, and the Average Pattern-Testing options and they have not repaired the problem. Never use this option on a regular basis; it should only be used if you have tried the other pattern-testing options and your problem persists. Regular use of the Maximum Pattern-Testing option could make your drive unusable.

WARNING Do not use Maximum Pattern Testing on RLL drives; the drive configuration is not compatible and may result is data loss.

Revitalizing the Selected Drive

After you choose a pattern-testing option (or choose OK in the Testing System Integrity window for a floppy disk drive), the Revitalize a Disk drive map appears and the revitalization process begins.

NOTE *If DiskFix is interrupted by a power failure or some other event out of your control while revitalizing activity is under way, run DiskFix as soon as you can reboot your computer. If your hard disk won't boot, boot from a floppy disk that has DOS installed on it (for example, the emergency disk) and start DiskFix from it or from the original floppy disk. DiskFix will attempt to repair any damage done by the accidental interruption.*



Drive map: Displays a graphic representation that lets you follow the automatic disk revitalization as it proceeds. DiskFix always reads and writes all the data on the drive and performs a non-destructive, low-level format. It also resets the interleave and applies test patterns if you selected those options for a hard disk drive. As the activity progresses, the map fills with symbols that show the status of each map block. The map title bar includes the pattern-testing option and interleave setting in effect and which drive is being scanned.

Status panel: Lets you know what activity is currently being performed on which data track, and what percentage of the process is complete.

Legend: Identifies the symbols on the drive map (see "Revitalize a Disk Symbols" following for a full description of each symbol). The Legend title bar tells you how many data tracks are represented by each symbol.

If you choose **Cancel** in the drive map window, choose **OK** to resume or **Cancel** to return to the DiskFix main menu. No matter which you choose, the activity to that point is saved. If you cancel, you may print the log report so you can keep a record of all activity to that point.

Revitalize a Disk Symbols

The following drive map symbols indicate the current activity:

Symbol	Legend	What It Means
▒	**Partition Space**	This block of space has not been scanned. Partition space symbols show how much of the drive map represents the selected drive.
C	**Read/Write**	This block is being read from or written to.
»	**Relocating Cluster**	A surface defect has been found in an area that is in use. The affected data is being moved to a pre-tested safe location and the cluster(s) containing the defective sector(s) are being marked as "bad" in the File Allocation Table (FAT) to prevent future use.
o00	**Pattern Testing**	A number of test patterns are being applied to this block of tracks to uncover a deeper level of media damage than read/write testing can detect.
O	**Formatting**	This block is being low-level formatted. The interleave is reset while the drive is being low-level formatted if you selected that option.

The following drive map symbols indicate the results of Revitalize a Disk activity. The symbols are listed in the order of their seriousness. If more than one error occurs within the block of tracks represented by one symbol on the drive map, the symbol representing the most serious defect appears.

Symbol	Legend	What It Means
U	**Uncorrectable**	An uncorrectable data error was found. *You should check the log report when Revitalize is finished to see what files, if any, are affected.* A capital "U" means the uncorrectable data was in a sector that is currently in use and the error is therefore of concern; a lowercase "u" means the uncorrectable data was in a sector not currently in use. If a sector in use is found to be defective, recoverable data is moved to a safe location and the cluster containing that sector is marked as "bad" in the File Allocation Table (FAT).
C	**Corrected Error**	A data error was found and corrected. This symbol is for your information only; since the data has been corrected, you do not need to do anything more. A capital "C" means the sector is currently in use; a lowercase "c" means the sector is not currently in use. If a sector in use is found to be defective, recoverable data is moved to a safe location and the cluster containing that sector is marked as bad in the FAT.
1 - 9	**# Media Defects**	Defective sectors were found in an unused area, or sectors in use were found to be defective but their data is intact. This symbol is for your information only; you do not need to do anything about it. The number displayed in the block ("1" through "9") is the number of defects found. A "9" means nine or more defects. Check the log report for details.
X	**Bad Cluster**	This area of the disk contains a cluster already marked as "bad" in the FAT. Since the cluster is already locked out from use, DiskFix has left its sectors alone.
	No Errors	No errors were found in this block of tracks.

TIP *You can check the log report (default name DISKFIX.LOG, in the root directory of the drive being revitalized) to find out if any defect other than the one displayed was found in a block of tracks.*

Using the Log Report

As DiskFix revitalizes your disk, it logs its activity in in a log report file. The log includes a description of each activity, what defects were found, and how they were repaired.

When the scanning and repairing activity is finished (or if you cancel), DiskFix asks if you'd like a log report of actions taken.

1. Choose **OK** to get a log report.

   Send the log report to the LPT1 **Printer** or save it as a text **File** on disk. The default log report file is DISKFIX.LOG, located in the root directory, but you can change the file's path and file name.

2. Send the log report to the LPT1 **Printer** or save it as a text **File** on disk.

   or

   Choose **Skip** to return you to the DiskFix main menu without a log report.

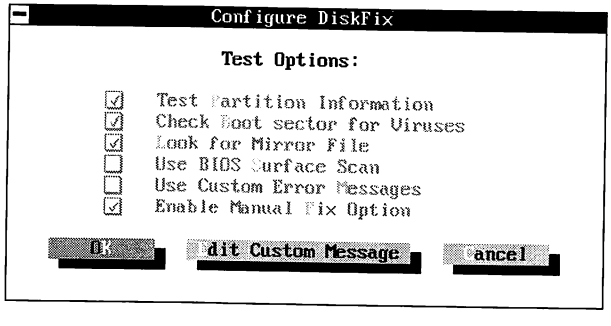
   After you choose whether you want a report, the DiskFix main menu reappears.

Uncorrectable data errors are marked with a "U" symbol on the drive map and details are listed in the log report. After Revitalize a Disk is finished, you should look up any uncorrectable errors in the log report to see what file(s) are affected so that you can decide what to do about them.

For example, an uncorrectable data error in an .EXE file could damage your disk when that program is run, so you should recopy that file from its original disk.

Configuring DiskFix Options

1. From the DiskFix main menu, choose **Configure Options**.



2. Select the options you want and choose **OK**.

   Test Partition Information: Tests the partition information and boot sector of hard disks before displaying the DiskFix main menu.

   This option is selected by default, and you should leave it on so that you always know your basic system is intact before proceeding to other DiskFix activities. Deselecting it allows DiskFix to run slightly faster but removes this layer of protection.

   Check Boot Sector for Viruses: Tests the boot sector of hard disks for viruses and lets you know if any are found. Some older Hewlett-Packard and Zenith computers modify the boot sector or partition table each time the system is started, as do disk compression programs such as Stacker. If you continually see messages that the boot sector, partition table, or both are being modified, turn off this option. See *Part 2 Central Point Anti-Virus* in Volume 2 for more information about protecting your boot sector against viruses.

   This option is selected by default, and you should l leave it on to protect your data against virus infection. Since virus testing is part of the initial DiskFix testing, you cannot select this option unless you also select Test Partition Information.

   Look for Mirror File: Looks for a Mirror file and compares Mirror information with the File Allocation Tables (FATs) to help determine which FAT has the fewest errors.

   This option is selected by default. Use Mirror at all times and leave this option on. Mirror, used in conjunction with DiskFix, provides the best data recovery protection possible.

   Use BIOS Surface Scan: Allows you to turn on a BIOS scan, which can, in some cases, completely recover data from defective sectors that would otherwise be lost.

   Both the Surface Scan and Revitalize a Disk options of DiskFix perform a surface scan. However, the Use BIOS Surface Scan configuration option affects *only* the type of scan performed by Surface Scan. Whether or not you select Use BIOS Surface Scan, Revitalize a Disk always uses a BIOS scan. This is because any disk that can be revitalized (low-level formatted) can also support a BIOS scan.

   BIOS surface scans cannot be used on some systems with hardware caches, translating controllers (ESCI, SCSI, and IDE) or device drivers such as Disk Manager and SpeedStor. DiskFix automatically detects most hardware and device driver combinations in which the BIOS scan will not work, and enforces the default scan. However, some of these situations cannot be detected.

If you select the BIOS scan option and it does not work, turn off that option to return to the default scan. The default scan accommodates the greatest combination of hard disks, controllers, and computer equipment.

TIP *The BIOS scan configuration option provides the greatest protection against data loss resulting from an interruption to the Surface Scan procedure.*

Use Custom Error Messages: Allows you to substitute a single customized message for all Repair a Disk error messages. For example, you might want all errors to tell a user to see their supervisor for help with the problem. No repairs are possible until you deselect this option and rerun the Repair a Disk option of DiskFix.

TIP *If you want to make sure that the Repair a Disk option of DiskFix will only analyze but not correct a disk until further action is taken, customize the error message text.*

Enable Manual Fix Option: Allows you the option of repairing disk problems with DiskEdit. When you elect to repair an error DiskFix finds, another dialog box asks you if you want to repair the problem manually. If you are experienced with disk editors, you can select the **Manual** button to run DiskEdit and repair the problem yourself. When you are finished with DiskEdit, you can run DiskFix again.

WARNING Do not attempt to make repairs yourself with DiskEdit unless you are *very* experienced using disk editors and the internal structure of a disk drive. Serious damage can be done to your hard disk by attempting manual repairs.

Customizing Error Message Text

1. From the DiskFix main menu, choose **Configure Options**.
2. Choose **Edit Custom Message**.
3. Enter the message you want displayed whenever DiskFix finds a problem that requires a user decision.
4. Press Tab to leave the edit panel.
5. Choose **OK**.
6. Select **Use Custom Error Messages**.
7. Choose **OK**.

Your customized message will be saved and will remain in effect until you deselect it. Once saved, the message can be edited or re-selected later.

Command-Line Options

You can use DiskFix to analyze a specified drive quickly without going through the DiskFix main menu. If a problem is found, an error dialog box lets you decide whether (and in some cases, how) to repair it.

Use the following command syntax in a batch file or at the DOS prompt:

```
DISKFIX  [d:] [d:...] [/TEST or /SCAN]
         [/RO:filespec] [/RA:filespec]
         [/HCACHE] [/HCARD]
         [CMOS] [LIST] [REBUILD]
```

NOTE *There are additional command-line options that you can use to control program display and* mouse operation. *See the* Global PC Tools Command-Line Options *chapter in* Part 4 General Reference *in this volume or type* `DISKFIX /VIDEO`.

Option	Description
d:	The drive to analyze. You can include multiple drives, each separated by a space. If no drive letter is included in the command line, the default is the current drive.
/TEST	Runs the Repair a Disk option of DiskFix on the specified drive, using the selected DiskFix configuration options. If an error is found, allows you to repair it. Generates a report if /RO or /RA is included.
/SCAN	Runs the Surface Scan option of DiskFix on the specified drive with no pattern testing, using the selected DiskFix configuration options. Generates a log if /RO or /RA is included.
/RO:	Overwrites an existing DiskFix report or log file. Requires the /TEST or /SCAN option.
/RA:	Appends new information to an existing DiskFix report or log file. Requires the /TEST or /SCAN option.
filespec	The path (optional) and name of the report file. If no path is specified, the report or log is saved in the current directory of the drive being analyzed.
/HCACHE	Necessary if you have a Hardcache card installed.
/HCARD	Necessary if you have a HardCard card installed.
/CMOS	Repairs CMOS information. DiskFix asks for your emergency disk to restore the CMOS information stored on it. DiskFix checks the validity of this information before writing to your system. Make sure your emergency disk is up-to-date.
/LIST	Displays partition table information.

Continued

Option	Description
/REBUILD	Rebuilds partition table information. DiskFix asks for your emergency disk to restore the image of the partition table stored on it. DiskFix checks the validity of this information before writing to your system. Make sure your emergency disk is up-to-date.
/?	Displays command-line help for DiskFix options.
/VIDEO	Displays command-line help for DiskFix program display and mouse options.

TIP *Add the DISKFIX /TEST command to your AUTOEXEC.BAT file, with report options if you wand DiskFix to analyze your drive(s) each time you start up.*

Examples

```
DISKFIX /TEST
```

This command runs the Repair a Disk option of DiskFix on the current drive and does not save a report.

```
DISKFIX C: /TEST /RA:C:\PCTOOLS\DISKFIX.RPT
```

This command runs the Repair a Disk option of DiskFix on drive C and appends the new report to the end of the existing DiskFix report in the file DISKFIX.RPT, which is in the PCTOOLS directory on drive C.

```
DISKFIX C: /SCAN /RO:C:\PCTOOLS\DISKFIX.LOG
```

This command runs the Surface Scan option of DiskFix with no pattern testing and overwrites the DISKFIX.LOG file in the PCTOOLS directory on drive C.

Unformat

Unformat recovers disks that have been accidentally formatted by PC Format and by most versions of DOS FORMAT. Unformat works best when you have been using Mirror and Compress regularly. See the *Mirror* and *Compress* chapters for details.

On hard disks, Unformat rebuilds the hard disk's File Allocation Table (FAT) and root directory from the file created by Mirror, or if Mirror was not run, from the hard disk data itself.

On floppy disks, Unformat can recover accidentally formatted floppy disks, but only if they were formatted with PC Format. (All versions of DOS FORMAT except DOS 5.0 erase the data from floppy disks so that you cannot recover it.)

Unformat may not restore all the files on your disk. Its success depends on whether you have a Mirror file and other factors. For an idea of what data you can recover and what data can be lost, see "Prognosis for Data Recovery," near the end of this chapter.

Here's what you'll find in this chapter:

- **Before You Use Unformat** describes safeguards to follow before using Unformat.
- **Starting Unformat** explains how to start Unformat from PC Tools Desktop and from the DOS command line.
- **Unformatting a Mirror-Protected Disk** explains how to unformat a disk that has been protected by Mirror.
- **Unformatting a Disk without Mirror** explains how to unformat a disk that has not been protected by Mirror.
- **Prognosis for Data Recovery** describes your chances of recovering from an accidental format.
- **Command-Line Options** describe the Unformat command-line options.

Before You Use Unformat

Follow the precautions below before using Unformat.

WARNING Casual use of Unformat can be dangerous. Use Unformat *only* if you need to recover from an accidental format. If your disk has been corrupted by a virus or power failure, use DiskFix rather than Unformat. To recover deleted files and directories, use Undelete.

Use Unformat *immediately* after an accidental `FORMAT`, `ERASE \*.*`, or `RECOVER \drive:` command. *Do not reboot (restart) your computer several times.* Rebooting can invalidate your Mirror file, if you have one. Do not run FDISK before using Unformat. FDISK can make it impossible to recover the disk if you do not have a Mirror file.

If You Cannot Access the Drive

Do not reboot from the accidentally formatted drive. This could corrupt the Mirror file, if you have one, and jeopardize full recovery.

If the device driver needed to access the accidentally formatted drive was on that drive, reboot from a disk with the appropriate device driver and CONFIG.SYS file on it. (Be sure this boot disk does not include an AUTOEXEC.BAT file that runs Mirror. You can remove the MIRROR command from the AUTOEXEC.BAT file, or rename or delete the AUTOEXEC.BAT file.)

TIP *You can use the emergency disk to reboot your computer. It does not run Mirror. Rebooting from a disk that runs Mirror could result in data loss or prevent disk access.*

Removing Memory-Resident Software

Central Point Software programs and mouse drivers are safe to use with Unformat. However, before you unformat a disk, you should unload other memory-resident programs that could access the disk during disk repair, including the DOS utilities SmartDrive and FASTOPEN. An easy way to do this is to boot the computer from the emergency disk.

WARNING Before using Unformat, you must unload from memory any disk-caching program other than PC-Cache (such as SmartDrive).

Unrecoverable DOS Formats

Some versions of DOS FORMAT.COM actually erase data. Unformat will not be able to recover the disk because there is no data on it. Destructive versions of DOS include:

- COMPAQ's MS-DOS through Version 3.2
- AT&T's MS-DOS up to Version 3.1
- At least some versions of the MS-DOS supplied by Burroughs

Starting Unformat

1. If Unformat was on the accidentally formatted drive, insert your emergency disk, the original PC Tools disk, or a working copy.
2. Choose **Unformat** from the Tools menu in PC Tools Desktop.

   or

   From DOS, type

   `UNFORMAT` Enter

   or

   `UNFORMAT` *d*`:` Enter

   where *d*: is the drive you want to unformat.
3. If you did not include a drive letter in the command, select the drive you want to unformat. (If you included the drive letter, it is already selected.)
4. Choose **OK**.

   Unformat validates the drive for unformatting.

   In the Mirror Used? dialog box, Unformat asks if you used Mirror to make a copy of the system areas for the selected drive. You can unformat a disk whether you did or not.

   If your disk was not protected by Mirror, use the "Unformatting a Disk without Mirror" procedure, later in this chapter.

Unformatting a Mirror-Protected Disk

Use this procedure to recover a disk whether or not you know you have used Mirror on the selected drive. (If Unformat does not find a Mirror file, it can unformat a disk without one.)

1. Choose **Yes** in the Mirror Used? dialog box.

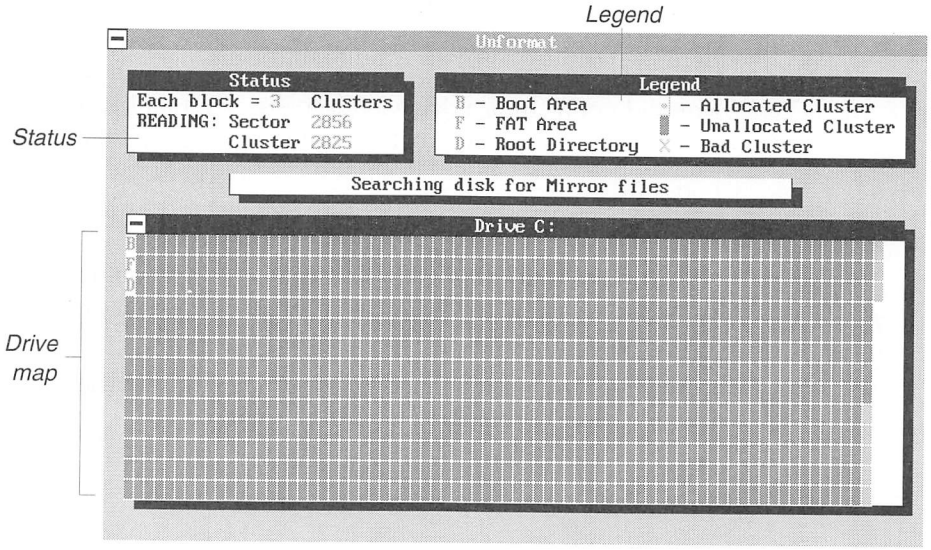
   Unformat searches the root directory for data files put on the disk since it was last formatted.

   If there are any new data files in the root directory, a Files Found dialog box lists them. These may be files you put on the disk after the accidental format, or system files placed there by the accidental format.

   If you need to keep any of the files in the list, choose **Cancel**, copy the files to another drive, then restart Unformat.

WARNING Do not choose OK unless the files in this list should be permanently deleted during the unformat. These files will not be recoverable, even by Undelete.

The drive map appears as Unformat searches for the Mirror file.



Drive map: Contains a graphic representation of all clusters on your disk. As the unformatting activity progresses, the map fills with symbols that show the status of each block of disk space. The map title bar identifies the drive being unformatted.

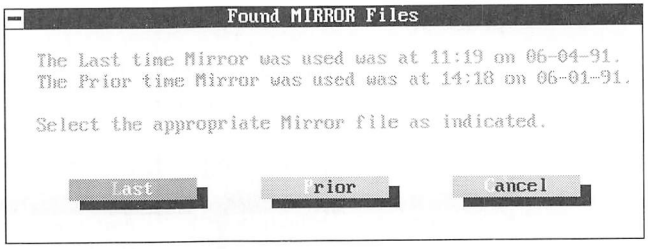
Legend: Identifies the different symbols on the drive map that represent the boot area, FAT, root directory, files (allocated clusters), free space (unallocated clusters), and bad clusters.

Status: Tells how many clusters are represented in each block of disk space shown in the drive map. A counter updates the sector and cluster number currently being searched or unformatted.

If Unformat cannot find Mirror files, it asks if you want to search the entire drive (sector by sector). Usually this happens when Mirror was not used on the drive. However, the Mirror files may be there but not in their expected location (for example, because another program has already used that part of the disk).

If you choose **Cancel** — or if you choose **OK** and Unformat still cannot find the Mirror file — you can unformat the drive without one. Choose **OK** in the Search Complete dialog box and go to step 2 of the "Unformatting a Disk without Mirror" procedure.

As soon as Unformat finds the Mirror files, it tells you the last and prior time that Mirror was run.


Found MIRROR Files
The Last time Mirror was used was at 11:19 on 06-04-91.
The Prior time Mirror was used was at 14:18 on 06-01-91.
Select the appropriate Mirror file as indicated.
Last
Prior
Cancel

2. Choose **Last** or **Prior** to select the Mirror file you want to use.

   Mirror always keeps the last (most recent) file and a prior (backup) copy. Use the prior Mirror file only if you ran Mirror after formatting your hard disk, or if data was damaged before the last time you ran Mirror.

   The unformatting begins automatically, and a progress bar informs you of the percentage complete.

3. Choose **Exit** when the unformat is finished to return to DOS.

4. After you leave Unformat, reboot your computer and then use the Repair a Disk option of DiskFix to make sure the File Allocation Tables are error-free.

Unformatting a Disk without Mirror

Use this procedure to recover a hard disk that was not protected by Mirror or to recover a floppy disk that was formatted by PC Format.

Unformat will not look for a Mirror file. Instead, it will rebuild the root directory and File Allocation Table (FAT) directly from information that remains on the disk.

Without a Mirror file, data recovery will not be as efficient and you may lose data. See "Data Recovered without Mirror," later in this chapter.

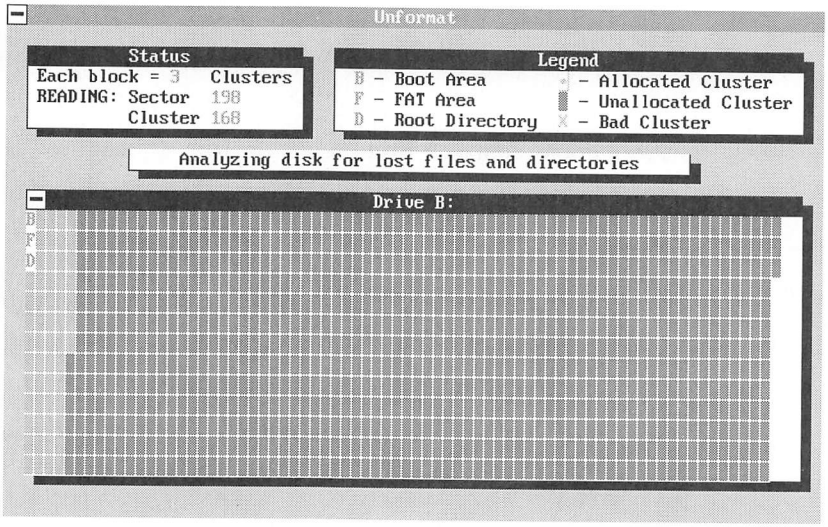
1. Choose **No** in the Mirror Used? dialog box.

   Unformat searches the root directory for data files put on the disk since it was last formatted.

   If there are any new data files in the root directory, a Files Found dialog box lists them. These may be files you put on the disk after the accidental format, or system files placed there by the accidental format.

   If you need any of the files in the list, choose **Cancel**, copy the files to another drive, then restart Unformat. Choose **OK** when you are ready to proceed.

   Unformat begins analyzing the drive for lost files and directories and shows you its progress on the Unformat drive map.



2. Choose **OK** to proceed to the next phase of unformatting, which writes to the disk.

   Unformat begins rebuilding your disk. If it encounters a fragmented file, Unformat identifies the file in the Unformatting Status dialog box and tells you how many bytes can be recovered from the first group of contiguous clusters.

3. Tell Unformat how to handle fragmented files:

   If you need the file, choose **Delete** or **Delete All**, because deleted files may be recovered later by using Undelete, usually without any data loss.

   Truncating will recover only the number of bytes shown in the Unformatting Status box; the remainder of the file will be lost, since Unformat without a Mirror file can only tell where a file begins but not where all its pieces are located.

   Delete: Deletes this file only. Unformat will identify the next fragmented file it finds and wait for your instruction.

   Delete All: Deletes this and all remaining fragmented files without prompting you again.

   Truncate: Recovers the first group of contiguous clusters. Unformat will identify the next fragmented file it finds and wait for your instruction.

   Truncate All: Truncates this and all remaining fragmented files without prompting you again.

4. Choose **Exit** when the unformat is finished to return to DOS.

5. Reboot your computer.

   Your disk should be in a usable condition, and CHKDSK should not show any errors (except for files that were not recovered properly).

   However, if the hard disk you just recovered was formatted with FORMAT.COM from DOS Version 3.x or higher, all files in the root directory will be lost. First-level directories will be renamed to arbitrary names such as SUBDIR.001 and SUBDIR.002. You can rename them using Directory Maintenance. See the *Directory Maintenance* chapter in this part of the volume for details.

6. If you deleted fragmented files in step 3, use Undelete to attempt to recover them. See the *Undelete* chapter in this part for details.

Once the Unformat is Complete

After you finish unformatting a disk without a Mirror file, it's a good idea to verify your system and data.

To make sure there is no damage to the File Allocation Tables, use the Repair a Disk option of DiskFix.

To verify that your files are intact, use your applications and examine data files.

- If a program does not run, it is probably due to fragmentation that Unformat could not discover. In this case, reinstall the program from floppy disks.
- If data files are corrupted, restore them from the most recent backup or re-enter lost information.

TIP *Use Mirror and Compress on your hard disk often, so that you won't ever have to unformat without Mirror again.*

Prognosis for Data Recovery

Using Mirror regularly, you have a greater chance of recovering from an accidental format.

Data Recovered with Mirror

Accidentally formatting a disk does not usually erase the data. Rather, the file names and locations, kept in the root directory and FAT, are changed so that DOS can no longer find the files.

Mirror saves a copy of this access information for use by Unformat. Unformat will restore your hard disk to the same state as that recorded by Mirror. However, even if you have a Mirror file, any files created since the last time you ran Mirror will be lost.

Data Recovered without Mirror

If you have not used Mirror, you cannot recover as much of your data, because Unformat will have to reconstruct the root directory and FAT based upon data it finds on the disk, rather than restoring it from previously saved data.

Here's what you should be able to recover:

- If the disk was formatted by PC Format and you have been running Compress regularly, Unformat can recover all or nearly all of your data.

- If the disk was formatted by a recoverable FORMAT.COM program (*not* one of those listed at the beginning of the chapter as unrecoverable) from DOS Version 3.x or higher, you will lose all the files in your root directory. All first-level directories will be renamed because the original names are lost.

Unformat will alert you to files that it couldn't recover properly. However, if you haven't been using Mirror, the only way to know if your files are intact is to run programs and look at data files.

Command-Line Options

Use the following command syntax at the DOS prompt:

```
UNFORMAT [d:] [/?] [/VIDEO]
```

NOTE *There are additional command-line options that you can use to control program display and mouse operation. See the* Global PC Tools Command-Line Options *chapter in* Part 4 General Reference *or type* `UNFORMAT /VIDEO`.

Option	Description
d:	Is the drive to unformat. That drive is highlighted when the Drive Selection dialog box appears.
/?	Displays command-line help for Unformat options.
/VIDEO	Displays command-line help for Unformat program display and mouse options.

Build Emergency Disk

The Build Emergency Disk utility copies vital information about your computer system, along with important PC Tools data recovery programs, to a bootable floppy disk in drive A. You can use this emergency disk to recover data, restore your system in case of a hard disk crash, recover from a virus infection, or boot your computer without loading all the memory-resident programs and device drivers in your CONFIG.SYS or AUTOEXEC.BAT files.

If your system configuration changes, such as when you install new device drivers or add another drive letter, you can use the Build Emergency Disk utility to update the disk. Always be sure to have a current emergency disk.

Here's what you'll find in this chapter:

- **Contents of the Emergency Disk** describes the information that the disk contains.
- **Starting the Build Emergency Disk utility** explains how to run the Build Emergency Disk utility from PC Tools Desktop or from the DOS command line.
- **Creating an Emergency Disk** explains how to create an emergency disk.
- **Updating the Emergency Disk** explains how to update an existing emergency disk so it reflects changes you've made to your computer.
- **Configuring the Emergency Disk** describes the options you can select to copy to the emergency disk.
- **Testing the Emergency Disk** explains how to check the emergency disk to make sure it works after you make it.
- **Using the Emergency Disk** explains how to use the emergency disk in case you need to recover data. Procedures are included for restoring lost Complementary Metal-Oxide Semiconductor (CMOS) information and for restoring damaged hard drive partition table and boot sector information.
- **Command-Line Options** describes the Build Emergency Disk command-line options.

Contents of the Emergency Disk

When you create an emergency disk, the program copies files in the following list to the floppy disk in drive A. You must create the emergency disk in drive A, since it is the boot drive.

Use the largest size media your drive allows to create an emergency disk. If the floppy disk you selected is not large enough to contain all the files for your system, the Build Emergency Disk utility determines which files are the most important and copies only those.

- The DOS system files. If you're using MS-DOS, the disk contains COMMAND.COM, IO.SYS, and MSDOS.SYS.
- To allow you to transfer the DOS system files to another disk, the disk contains either SYS.EXE or SYS.COM.
- The DOS system-utility program FDISK.
- A simple CONFIG.SYS file that specifies the FILES and BUFFERS settings for DOS and, depending on your configuration, may load the drivers for your keyboard, disk, or international support.
- A simple AUTOEXEC.BAT file that identifies the emergency disk and, depending on your configuration, may load the drivers for your disk.
- The following list shows the PC Tools data recovery programs to use in case you cannot access the files on your hard drive. (For more details on using these programs, see the chapters about each one.)

  Central Point Anti-Virus: Detects, cleans, and immunizes viruses and verifies the integrity of your files to guard against future virus infection.

  DiskEdit: Lets you perform advanced disk-repair operations yourself. (For experienced users only.)

  DiskFix: Restores lost clusters, cross-linked files, lost directories, CMOS, partition table, and boot sector information.

  Undelete: Lets you recover deleted files.

  Memory Information (MI): Displays information about your computer's memory.

  PC Format: Formats your hard and floppy disks.

  Unformat: Restores information lost during a format.

- The following utility files:

  PARTNSAV.FIL: Contains critical information about your CMOS, partition table, and boot sector information. DiskFix uses this file when necessary to repair disk problems and will ask for your emergency disk.

  ADVICE.HLP: Contains online help for various problems you may encounter. This file is accessed from DiskFix.

  CPSCOLOR.DAT: PC Config screen colors.

  CPSHELP.OVL: This is the online help engine.

  DISKFIX.HLP, CPAV.HLP, and UNDEL.HLP: Provide online help for DiskFix, Central Point Anti-Virus, and Undelete whenever you press F1.

  CPSMAIN.FNT: Contains the graphic character display for PC Tools programs. (Copied to EGA and VGA systems only.)

  LIBPCT00.DLO and CPSMM.BIN: Required for the Undelete, DiskEdit, PC Format, and Unformat programs.

Starting the Build Emergency Disk Utility

Central Point Software recommends that you create your emergency disk during the installation process and update it whenever you upgrade or change a mouse or disk driver, or add any new driver to your system.

If you did not create the emergency disk during installation, you can create one by starting the Build Emergency Disk utility from PC Tools Desktop.

For more information about creating an emergency disk from the Install program, see the "Creating an Emergency Disk" section in the *Installing PC Tools* chapter in Part 1 of this volume.

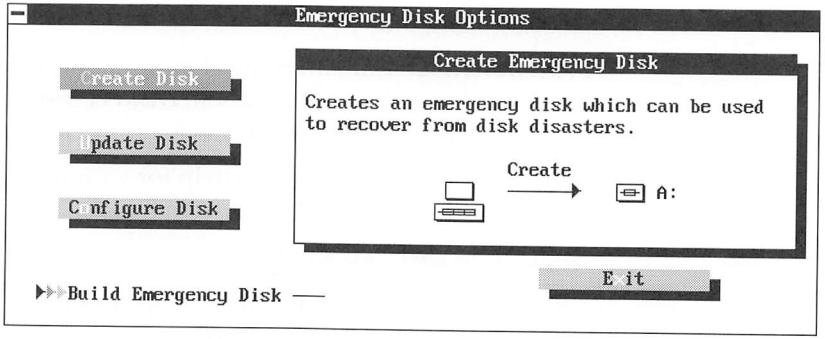
▶ Choose **Build Emergency Disk** from the Tools menu in PC Tools Desktop.

or

From DOS, type

`EDISK` Enter

The Build Emergency Disk utility scans memory for viruses, then analyzes your system. If the program finds a virus in memory, it automatically removes it. When the virus scan is complete, the main Build Emergency Disk window appears.



Creating an Emergency Disk

Use the Create Disk option to build an emergency disk the easiest and most automatic way. The program determines the density of the destination floppy disk and copies the most critical files to it. If you use a high-density disk for your emergency disk, the program copies all the files you need to perform data recovery procedures, such as recover your hard disk, undelete files, remove viruses, or format or unformat your disk. If you want to select the files to copy to the disk yourself, choose Configure Disk.

1. Insert a floppy disk in drive A.
2. Choose **Create Disk.**

   The Build Emergency Disk utility analyzes the floppy disk to determine its size and whether it is formatted. If the program finds any files on the disk, it asks if you want to erase them or use another disk.

   The program formats the disk and copies files, informing you about which files are being copied.

   If there isn't enough room on the floppy disk for all the files, the Build Emergency Disk utility copies the most important files to create a usable emergency disk.

   The minimum configuration (for a 360K disk) contains the following: the files for running DiskFix, an AUTOEXEC.BAT file, a CONFIG.SYS file, COMMAND.COM, PARTNSAV.FIL, IO.SYS, and MSDOS.SYS (or the PC DOS equivalents). This set of files allows you to start your computer from the floppy disk and perform disk-repair operations only. If you have only 360K disks, you can use the Configure command to create other disks that contain copies of Undelete, Central Point Anti-Virus, or Unformat.

   The program then notifies you that it is finished and recommends that you test the disk.

3. Choose **OK**.
4. Choose **Exit**.

   To test the emergency disk, see "Testing the Emergency Disk" later in this chapter.

Updating the Emergency Disk

If you upgrade or change your operating system, you must create a new emergency disk to match your system's current setup.

If you add or change a drive, install a disk driver, make a new partition, install or remove a mouse or other input device, or make other similar changes to your computer's configuration, use the Update Disk option.

1. Insert your emergency disk in drive A.
2. Choose **Update Disk.**

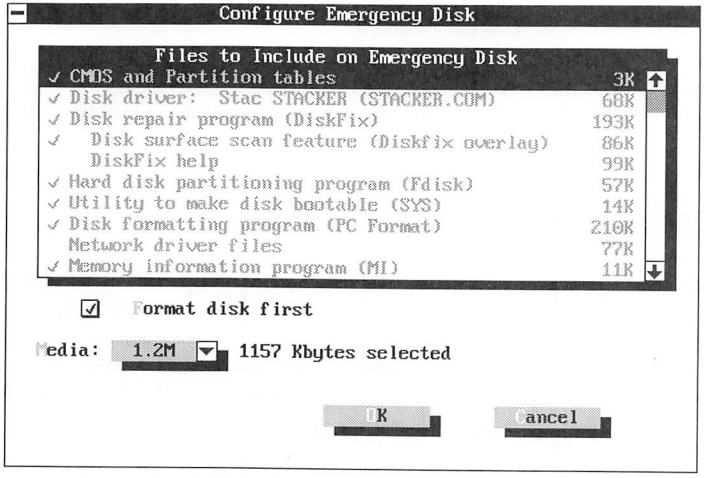
   The program saves your current CMOS and partition table information to the PARTNSAV.FIL file, then adds any new device drivers. If any other utilities or files on your system are newer than those on the emergency disk, the program replaces them. Finally, the program updates the AUTOEXEC.BAT and CONFIG.SYS files on the emergency disk. No other new files are added; if an item is not selected in the list, it is not updated.

Configuring the Emergency Disk

Use this option if you want to select the files to copy to the emergency disk, instead of copying the default files.

1. Choose **Configure Disk**.

   The Emergency Disk Configuration dialog box appears. This screen shows the options specific for *your* system. The options shown in the following screen may not reflect your system.


Configure Emergency Disk
Files to Include on Emergency Disk
✓ CMOS and Partition tables 3K
✓ Disk driver: Stac STACKER (STACKER.COM) 68K
✓ Disk repair program (DiskFix) 193K
✓ Disk surface scan feature (Diskfix overlay) 86K
DiskFix help 99K
✓ Hard disk partitioning program (Fdisk) 57K
✓ Utility to make disk bootable (SYS) 14K
✓ Disk formatting program (PC Format) 210K
Network driver files 77K
✓ Memory information program (MI) 11K
Format disk first
Media: 1.2M 1157 Kbytes selected
OK
Cancel

2. Select the media size of the floppy disk.

   Make sure the media format is correct. That is, do not format a 360K disk as a 1.2MB disk.

3. If the floppy disk is not already a bootable disk, select **Format disk first**.

4. Select the items you want copied to your emergency disk and choose **OK**.

   The dialog box shows the amount of disk space each item needs. If you select more options than will fit on the disk, the program notifies you.

NOTE *The totals may not seem accurate because some files have "overhead" associated with them. For example, if you deselect the help files, the total reflects the size of any shared files, along with the sizes of the individual help files.*

   See the "Emergency Disk Configuration Options" section following for an explanation of each option.

5. Insert a floppy disk in drive A.

6. Choose **Create Disk.**

   If the program finds any files on the disk, it asks if you want to erase them or use another disk.

   The program then copies the selected files, informing you as it proceeds.

   When the disk is successfully created, the program informs you.

7. Choose **OK**.

   Test the emergency disk to make sure it works after you finish. See "Testing the Emergency Disk" later in this chapter.

Emergency Disk Configuration Options

This section describes each option you can select from the Configure Emergency Disk screen. Only options relevant to your system appear. For example, if you are not using DR DOS, the DR DOS system login option does not appear.

CMOS and Partition tables: Copies the information from your CMOS and partition tables to your emergency disk. This information is saved in the PARTNSAV.FIL file and is used by DiskFix. This file is extremely important for recovery purposes.

Disk driver: Copies the disk driver to your disk and installs it in your CONFIG.SYS file. If you do not select the CONFIG.SYS option, the driver is not installed when you start your computer with the emergency disk. The driver listed here can be one of many kinds of disk drivers. The driver controls the way your computer uses the hard disk—for example, some disk drivers automatically compress files on the disk.

Disk repair program: Copies DiskFix to your disk. If you select the CMOS and partition tables option, be sure to select the Disk Repair option as well. DiskFix can repair most disk problems, including problems booting (starting) your computer or accessing the information on a disk. It can also detect viruses in the boot sector of your computer and recover lost cluster chains.

> **Disk surface scan feature:** Copies the surface scan and revitalize options of DiskFix, which scan the disk surface for defects.
>
> **DiskFix help:** Copies the help files for DiskFix, which include advice on most DOS and CHKDSK error messages and how to repair them.

Hard disk partitioning program: Copies the DOS FDISK program to your disk. FDISK allows you to create and edit partition tables on your hard disk. Partition tables keep track of information about your disk's partitions (sections of a disk that you can treat as separate drives).

Utility to make disk bootable: Copies the SYS.COM file to your disk. This DOS utility allows you to transfer the disk operating system files to another disk to boot your computer. PC Format does what SYS.COM does and also formats disks. However, if you're short of disk space and want to make a bootable disk, but do not need to format disks, you can select this option instead.

Because the emergency disk is already a bootable disk, you do not need this option to start your computer with the emergency disk and recover data.

Disk formatting program: Copies PC Format to your disk. PC Format allows you to format hard and floppy disks (prepare them to store data) and to create a system disk (a disk you can use to start your computer).

Because the emergency disk is already bootable, you do not need this option to start your computer with the emergency disk and recover data. However, if a disk is damaged beyond recovery, you may want to reformat it, for example, before restoring a backup to it.

Network driver files: Copies the network access files (depending on your network type) to your disk.

You can also specify the directory where the network files are by adding the directory path to the /NET command-line option, as in this example:

```
EDISK /NET=C:\NETWORK
```

Memory information program: Copies Memory Information (MI) to your disk. Memory Information shows you what programs are resident in memory, how much space they take up, and how much memory you have available for running other programs. Memory Information isn't necessary for recovering data, but it can be a useful diagnostic tool.

Unformat disk program: Copies Unformat to your disk. Unformat allows you to recover most or all of the information on a disk that you accidentally formatted. If you have been using the PC Tools Mirror program, you have the best chance of recovering data if this happens.

File Undelete program: Copies Undelete to your disk. (If it is not available, the Build Emergency Disk program attempts to copy the DOS 5 version of Undelete.) Undelete allows you to recover files that have been deleted from your disk. If you have been using the Delete Tracking or Delete Sentry methods of delete protection, you have the best chance of recovering a file completely. However, Undelete can also recover many unprotected files that have been deleted.

Undelete help: Optionally copies the Undelete help file.

Virus scanning program: Copies Central Point Anti-Virus to your disk. This program lets you scan, clean, and immunize your files, ensuring against virus infection.

Anti-Virus help: Optionally copies the help file for Central Point Anti-Virus.

Hard disk editing program: Copies DiskEdit (and optionally, the DiskEdit help file) to your disk. This program allows you, if you are experienced in using disk editors, to make disk repairs yourself. With DiskEdit you can edit your disk's file allocation table, boot sectors, master boot record, and other disk problems.

WARNING Unless you are very familiar with disk editors, use DiskFix to fix disk errors. Editing critical disk areas can cause irrecoverable damage.

DiskEdit help: Optionally copies the help file for DiskEdit.

Mouse driver: Copies your mouse driver to your disk.

AUTOEXEC.BAT file: Creates a subset of your AUTOEXEC.BAT file. This file is run automatically when you start your computer. The AUTOEXEC.BAT file identifies the emergency disk, sets your prompt, and, depending on your configuration, may load the drivers for your mouse or disk.

CONFIG.SYS file: Creates a subset of your CONFIG.SYS file. This file is run automatically when you start your computer. The CONFIG.SYS file specifies the FILES and BUFFERS settings for DOS and, depending on your configuration, may load the drivers for your disk, keyboard, display, or international support.

Normally, you would not deselect either the CONFIG.SYS file or AUTOEXEC.BAT file option. You need the device drivers loaded through these files, or you cannot access your hard drive when you start your computer with the emergency disk.

DR DOS system login: Copies the DR DOS system login program to your disk. If you use DR DOS to password-protect your disk, you need this program (along with your password) to use your disk.

International keyboard: Copies the KEYB.COM and KEYBOARD.SYS files (KEYBOARD.EXE in some versions of DOS) to your disk. These files are required to configure your keyboard for use with a language other than US English.

International display: Copies the COUNTRY.SYS file to your disk and installs it in the CONFIG.SYS file (if selected). This file is required to configure DOS to use international settings for time, dates, currency, decimal separators, and other display options.

Format disk first: Reformats the floppy disk in drive A and makes the disk bootable before copying files to it. This option is on by default. You can deselect this option only if you are in a hurry, know the disk has no flaws, and it was formatted in a compatible disk drive.

Testing the Emergency Disk

Once you create an emergency disk, you should test it to make sure it works correctly.

1. Insert the emergency disk in drive A, or your bootable floppy drive.
2. Restart your computer by pressing Ctrl Alt Del.

   You will know that the emergency disk passes the test if your computer displays the A:\> prompt and identifies itself as the emergency disk, with information similar to the following:

   ```
   Central Point Emergency Disk V8.0

   This disk was created 09/29/1992 at 07:14p
   ```

   If it doesn't, see "If the Emergency Disk Doesn't Work," following.
3. Run DiskFix from the emergency disk to make sure it works.
4. Remove the emergency disk, write-protect it, affix the label to it, and store it in a safe, accessible place.
5. Open the drive door, and restart your computer again by pressing Ctrl Alt Del.

If the Emergency Disk Doesn't Work

If you can't start your computer using the emergency disk, try these steps. After each one, try booting from the emergency disk again. If it still doesn't work, go on to the next step.

Make sure your computer is not configured to disable booting from a floppy.

1. Try booting from the emergency disk a second time.
2. If that doesn't work, create a new emergency disk.
   - From DOS, type

     EDISK Enter

     Make sure the media format is correct. That is, do not format a 360K disk as a 1.2MB disk.
   - Follow the prompts to make a new emergency disk.
3. If that doesn't work, see the *Central Point Software Registration and Support Card* for information about contacting the Technical Support department.

Using the Emergency Disk

Use your emergency disk when disaster strikes and your computer refuses to operate correctly, for example, when your hard disk can't be read or written to. Follow these steps:

1. Insert the emergency disk in drive A.
2. Restart your computer by pressing Ctrl Alt Del.
3. From DOS, type

   DISKFIX Enter

   If the emergency disk has been configured to include all the utilities, you can also run Undelete, PC Format, MI, Unformat, and FDISK from the emergency disk. See the appropriate chapters in this manual. See your DOS manual for information about FDISK.
4. When finished, open the drive door to release the floppy disk and press Ctrl Alt Del to restart from the hard drive.

If your computer doesn't restart with the preceding steps, perform the following:

1. Turn off your computer using the on/off switch.
2. Turn on your computer and wait for the A:\> prompt to appear.

   or

   Press the reset button.

   When your A:> prompt appears, you're ready to start your recovery procedures.

   - Run DiskFix.
   - Perform any other data recovery procedures as necessary.
   - Restart your computer.

Restoring CMOS Information

If you cannot access a floppy or hard disk, it may indicate damaged CMOS information.

1. Restart your computer from the emergency disk.
2. Run DiskFix with the /CMOS option to rebuild the CMOS information.
   - From DOS, type

     DISKFIX /CMOS Enter

3. Select the drive containing the recovery data.

   DiskFix reads the information from the PARTNSAV.FIL and validates it.

4. Choose **Update CMOS**.

   The CMOS information is restored.

5. Eject the emergency disk and restart your computer.

   If the problem continues, see the *Troubleshooting Data Recovery and System Utilities* chapter for more information.

Command-Line Options

Use the following command syntax at the DOS prompt:

```
EDISK [/DEST=dir] [/NET=dir] [/BATCH] [/QUIET]
      [/VERBOSE] [/BOOT_DEV=x] [/NOVIRUS] [/?] [/VIDEO]
```

NOTE *There are additional command-line options that you can use to control program display and mouse operation. See the* Global PC Tools Command-Line Options *chapter in* Part 4 General Reference *in this volume or type* `EDISK /VIDEO`.

Option	Description
`/DEST=dir`	Specifies a directory where you can copy files for making an emergency disk. This can be another a directory on another volume. This is a useful command-line option for system administrators to use, along with /BATCH, to copy emergency disk files for users into their HOME directories on the network.
`/NET=dir`	Specifies the directory where the network access files are located if not specified in your path or AUTOEXEC.BAT file.
`/BATCH`	Runs the Build Emergency Disk program without any user interaction. This option is used in batch files and must be used with the /DEST option.
`/QUIET`	Used in a batch file, prevents the file copy progress from appearing.
`/VERBOSE`	Displays error message text for troubleshooting purposes. These may be technical, but can be useful to help you solve problems.
`/BOOT_DEV`	Specifies the drive where your AUTOEXEC.BAT and CONFIG.SYS files are located if not the default, C. Use this option if the Build Emergency Disk program does not find your disk drivers.

Continued

Option	Description
/NOVIRUS	Bypasses the initial scan for viruses in memory.
/?	Displays command-line help for emergency disk options.
/VIDEO	Displays command-line help for the Build Emergency Disk program display and mouse options.

Examples

```
EDISK /BATCH /QUIET /DEST=H:\HOME\USER
```

This executes the Build Emergency Disk program and automatically copies emergency recovery files to the \USER directory, without showing the copy status on the screen. System administrators can use this command to copy emergency disk files for users into their \HOME directories on the network. Then if a user can't access his hard drive, the system administrator can create an emergency disk for the user from this directory.

```
EDISK /NOVIRUS
```

Starts the Build Emergency Disk program without scanning memory for viruses.

```
EDISK /BATCH /QUIET /BOOT_DEV=D
```

This executes the Build Emergency Disk program and tells it to look on drive D for the system files. If you have a Stacker drive (or another type of disk-compression utility that reassigns the drive letter), you may have to direct the Build Emergency Disk program where to find these files.

FileFix

FileFix helps you recover damaged data files for the most popular types of spreadsheet, database, and word-processing applications. A damaged data file is a disk file that you cannot load into the application that created it, or a loaded file that the application cannot read correctly.

NOTE *FileFix helps you recover information from files that are badly damaged and cannot be repaired by other means. Before using FileFix, try the techniques listed in the "Before Using FileFix" section of this chapter to restore the file. Do not use FileFix as a diagnostic tool to confirm the structure of a file; you may damage the file unintentionally.*

Here's what you'll find in this chapter:

- **What FileFix Repairs** lists the applications and types of damage FileFix can repair.
- **Before Using FileFix** gives information on how you may be able to recover a file without using FileFix.
- **Starting FileFix** describes how to start FileFix and use it to repair damaged files.
- **Repaired File and Report File Names** explains how FileFix names repaired files and report files containing information about the status of the repaired files.
- **Repairing Spreadsheet Files** describes options for repairing files created by spreadsheet programs such as Lotus 1-2-3, Symphony, or Excel, and other programs that use these file formats.
- **Repairing Database Files** describes options for repairing files created by dBase, Paradox, R:Base, and other programs that use these file formats.
- **Repairing WordPerfect Files** describes options for repairing files created by WordPerfect.
- **Command-Line Options** describes command-line options available for FileFix.

What FileFix Repairs

FileFix can repair different types of damage for different applications.

For This Application/Version	FileFix Repairs These Types of Damage
Spreadsheets	
Excel version 3.0 Excel version 4.0 Lotus 1-2-3 Release 1.0A, 2.01, 2.2, 2.3, or 3.x Lotus 1-2-3 for Windows, Release 1.x Quattro Pro for DOS 3.0 and 4.0 Symphony Release 1.x and 2.x	• Invalid cell entries • Invalid version number • Damaged formula cells • Damage to the beginning of a file
Databases	
Clipper dBase II, III, III Plus, IV, 1, 1.1, and 1.5 dBXL FoxBase 1.0 and 2.0 Fox Pro Plus Paradox Release 3.0, and above R:Base System V	• Damaged file headers • Zapped dBase files • Record frame error • Illegal characters
Word Processing	
WordPerfect for DOS 5.0 and 5.1 WordPerfect for Windows	• Damaged file headers • Illegal characters

Before Using FileFix

Before you run FileFix, try the following techniques. You may be able to restore the file without using FileFix.

- Determine if the error you're trying to correct is a file error or a disk/system error. If DOS cannot access your file at all—for example, if you cannot copy the file—there may be damage to the disk or to the DOS system area. You must repair this damage before using FileFix.

  Look up DOS error messages and general disk problems in the *Troubleshooting Data Recovery and System Utilities* chapter in this part for recovery instructions. For example, you might need to use DiskFix to repair the disk. Then, if the file still will not load properly, use FileFix.

WARNING If you cannot access your hard disk, use your Emergency Disk to boot your system. Then make sure all DOS and system errors are repaired before trying to run FileFix. This ensures that you don't overwrite data files accidentally.

- If you have a valid and current copy of the file you're trying to fix, either on your hard disk or in a backup disk set, restore the copy and delete the damaged file. Some programs, such as WordPerfect and dBase, can create backup copies of your files automatically. If you run CP Backup regularly, it's possible you already have a backup copy of the data file you hope to recover.
- Use Undelete to search for and recover a copy of the file if it was recently deleted may not be overwritten yet. See the *Undelete* chapter in this part for instructions.
- If none of the above methods recovers the file you need, check to see if FileFix supports the application that created the file you're trying to recover. You can find the list of supported programs and versions in the previous section.

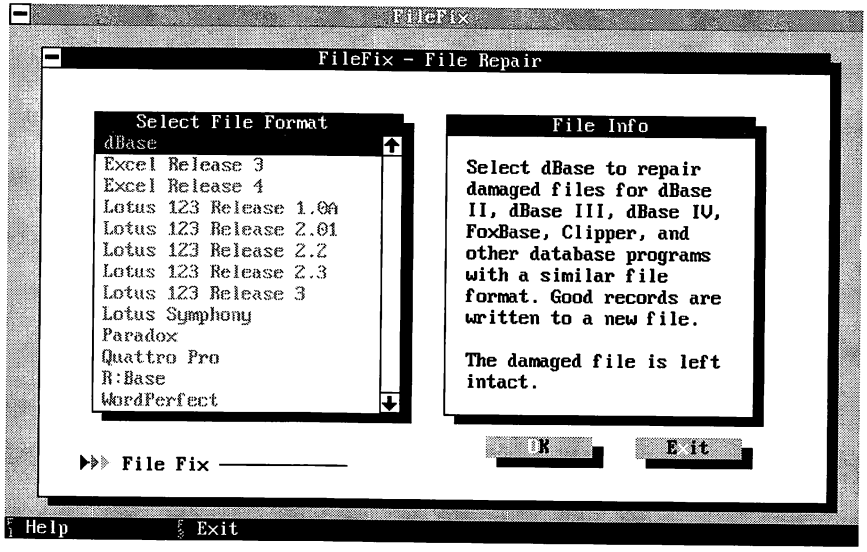
Starting FileFix

1. Choose **FileFix** from the Tools menu in PC Tools Desktop.

   or

   From DOS, type

   `FILEFIX` Enter



TIP *To start FileFix and repair a specific file, from DOS type*

`FILEFIX` *`filename`* Enter

For `filename`*, substitute the name of the file you need to repair.*

2. Select the file type you want to fix, then press Enter.

   The File Repair dialog box appears and lets you select the file you want to repair. FileFix automatically adds the appropriate file extension, and displays file names in the current directory with that extension. You can change the file extension, and search directories and drives for other file names.

Default file extensions are:

Extension	File Type
.DB	Paradox
.DBF	dBase (all), FoxBase, Fox Pro, and Clipper
.RBF	R:Base
.DOC	WordPerfect
.WRK	Symphony Release 1.0
.WR1	Symphony Release 1.1 or later
.WKS	Lotus 1-2-3 Release 1.x
.WK1	Lotus 1-2-3 Release 2.x
.WK3	Lotus 1-2-3 Release 3.x Lotus 1-2-3 for Windows Release 1.x
.WQ1	Quattro Pro
.XLS	Excel

3. Select the file you want to fix, then choose **OK**.

   FileFix tests the integrity of the disk, and if it passes, a repair options screen appears that applies to the specific type of file you've selected.

4. Specify the name you want to give the repaired file.

   or

   Skip this step to use the default name for the repaired file.

5. Select the recovery options you want to use.

NOTE *The default options selected are designed to provide optimum repair capabilities for most files. Use the default option settings first.*

   For information on specific options for spreadsheet, database, or WordPerfect file recovery, see the appropriate section later in this chapter.

6. Choose **OK** to start the file recovery process.

   A dialog box shows the progress of the repair.

7. When the repair is complete, choose **OK** to continue.

   A dialog box asks if you would like to view the repaired file.

8. Choose **OK** to view the repaired file.

   or

   Choose **Cancel** if you do not want to view the file.

   The Report Options dialog box appears.

NOTE *No report file is generated for WordPerfect repairs. When you repair a WordPerfect file, this dialog does not display.*

9. Select the report option you want and choose **OK.**

   The report gives a summary of the repair operation and a list of any damage found.

   Report to Printer: Sends the report to the printer attached to LPT1.

   Report to File: Saves the report as a text file.

   If you select **Report to File**, accept the default report file name, which is the original file name plus the extension .RPT, or specify a different file name.

NOTE *If you save the report as a text file, it may be two to three times bigger than the original damaged file. If you choose this option, be sure there is enough room on the disk to hold the file.*

Repaired File and Report File Names

When you use FileFix to repair a damaged file, two new files are created: a copy of the file that has been fixed, and a report file. The repaired data file contains the corrected data. You can give the repaired data file any valid DOS name. By default for all spreadsheet, word-processing, and most database files, FileFix gives the repaired file the same name as the original file along with the extension .FIX. For example, repairing the file DATA.DBF creates a file called DATA.FIX, and repairing the file SPREAD.WK1 creates a file called SPREAD.FIX.

There are two exceptions to the default method for naming repaired files:

- Repaired Paradox files retain the original extension .DB, and the file name is changed to FIXED. This means a repaired Paradox file is always named FIXED.DB, unless you specify another file name. This exception is made because Paradox only reads database files that use the .DB extension.
- R:Base database files are always handled in groups of three: the data dictionary file, the data file, and the index file. For example, when you use the file DATA in R:Base, you are actually accessing information contained in DATA1.RBF, DATA2.RBF, and DATA3.RBF. Whenever you use FileFix to repair an R:Base database file, all three files are repaired, resulting in the creation of the files FIXED1.RBF, FIXED2.RBF, and FIXED3.RBF.

Report files contain information about the status of the repaired file and changes that were made to the original damaged file. Report files use the same name as the repaired file along with the extension .RPT. For example, the report file for repairing the dBase file DATA.DBF is called DATA.RPT and it might look like this:

```
                Central Point Software FileFix

File that was repaired: D:\DATA.DBF
The repaired file is:   D:\DATA.FIX
Selected Format is:     dBase
Time of repair:         07/22/1992  10:13a

Repair mode:                          Fully automatic
Use Clipper field limits:             Off
Fix shifted data automatically:       On
Strict character checking:            On
No problems found in header.

Physical records (based on file size):              4
Records recovered unchanged:                        4
Records recovered with repairs:                     0
                                                -------
Total records recovered:                            4

Recovered bytes:                                  680
Replaced bytes:                                     0
Unrecovered bytes:                                  0
Unrecovered sections:                               0

File     Physical Recovered Recovery Number
Location Record   Record    Action   of Bytes File Data
-------- -------- --------- -------- -------- ---------
      No data discarded or replaced
```

Renaming Repaired Files

Once you repair a file, load the fixed file into the parent application to make sure the file works correctly, and to determine how much damage, if any, remains. Most repaired files load easily into the parent application.

After you verify that the file loads correctly, and that all the data you need has been recovered, rename the repaired file to change the .FIX extension, or the name FIXED. Give the file an extension appropriate for the parent application, or a new file name you want to use.

Repairing Spreadsheet Files

Most popular spreadsheet applications use data files that subscribe to the Lotus 1-2-3 spreadsheet data file format. Some applications, such as Quattro Pro and Excel, may include features that are not available in Lotus 1-2-3 spreadsheets. FileFix can repair all of these spreadsheet files.

Spreadsheet files are saved with format information needed to reproduce the cells and their contents, global settings, column widths, and so forth. The data in each record is organized in a specific way, according to the type of information stored in the record.

Spreadsheet files contain one or more records, each of which may contain format information or cell data. When loading a spreadsheet into the parent application, the application expects to find the data in a certain order. If the application cannot determine the order or it encounters any damage in the spreadsheet, the application cannot load the spreadsheet correctly or completely. This means that some or all of the data, particularly in the area around the damaged area, is unusable and may be lost—unless you recover the data using FileFix.

Spreadsheet Repair Options

Use Cell Content in Analysis: Analyzes the linkage between cells but does not look at the contents of each cell.

Allow Add-In Cell Types: Ignores cells that do not match the selected application's cell format. Some spreadsheet applications allow you to import information from other programs. Such information is stored in the file with its original application's cell type. If you know that information of this type exists in your file, select this option.

Verifying the Repaired Spreadsheet File

After you repair a damaged spreadsheet, exit from FileFix and try to load it with the appropriate spreadsheet application.

WARNING Don't delete the original damaged file until you verify that you can load the repaired file and that it contains all the data that you can recover.

Once you repair a spreadsheet file successfully, you need to change the .FIX extension to the extension used by the program that created the original file. In some cases, such as with Lotus and Symphony, you also need to consider the version of the program to determine the correct extension to use.

If You Cannot Load the Spreadsheet File

If you cannot load a repaired spreadsheet file, change the options in the Spreadsheet Repair Options dialog box and try again.

Repairing Database Files

FileFix can automatically repair most types of damage to database files created in dBase, Paradox, and R:Base. Some database files, such as dBase files, are similar to spreadsheet files in that each file contains a header, and data is located in a series of fields (called *cells* in a spreadsheet) that must be arranged in the proper order. That's where the similarity ends.

Paradox and R:Base database files are unique. Paradox files contain indexing information for every record in the database. R:Base requires three files for a single database: the data dictionary file, the data file, and the index file. When FileFix repairs an R:Base file, it actually repairs three separate files.

NOTE *Repairing R:Base files is completely automatic; there are no repair options to configure.*

Each database file contains a file header, which contains information defining the structure of the file. If the header is damaged, the file can't be read correctly—even if its data is intact. FileFix can import a replacement header from an undamaged file that has a similar format. If no replacement is available, you can create a new header to match the data in the damaged file.

TIP *This task is much easier if you printed a copy of the file before it was damaged.*

FileFix can also repair dBase files that have been "zapped." The dBase ZAP command removes all records from the file, leaving only the header information. FileFix automatically finds the deleted data and restores it to the file.

Paradox Repair Option

Recover Deleted Records: Recovers all information in the file array without regard to the number of records the file's header indicates exist. When this option is off, FileFix recovers only the number of records indicated in the file's header.

dBase Repair Options

Automatic Recovery: Repairs the file without any assistance from you. Always try this option first.

Display damaged records before fixing: Lets you view damaged records and evaluate them individually. If Automatic Recovery doesn't work first, then try this option.

Display each record: Lets you view and evaluate every record in the file. Since this method lets you discard records that FileFix does discard automatically, use it when you've already tried one of the other options and ended up with a file containing meaningless records.

If you select **Display damaged records before fixing** or **Display each record**, FileFix stops at either damaged records or every record and gives you several options.

Accept: Adds the displayed record to the recovered file.

Reject: Discards the displayed record.

Mode: Lets you switch to either of the other repair options at any point in the recovery process. For example, you might start out displaying damaged records before fixing, then decide that the file actually doesn't need repair and switch to Automatic Recovery.

Cancel: Ignores the repairs to the file and displays the File Repair screen.

Check data alignment: Checks data alignment as the file is repaired. Always select this option unless you've opened the file and know that the only problem is a few meaningless characters. If this is the case, FileFix recovers the file more quickly with this option off.

Check for binary and graphics characters: Checks the file for special graphics characters. If the file is being recovered automatically, the program replaces these characters with spaces; otherwise, it stops and lets you view the record. Select this option unless the file intentionally contains graphics characters.

File was created with Clipper: Used only if the file was originally created using Nantucket Software's Clipper.

Repairing a dBase File Header

The header of a database file contains information about the file structure, such as field names, lengths, and types. If this information is damaged or missing, FileFix displays an error message.

1. Choose **Review** to review the record structure.
2. Choose **Modify.**
3. Select the method you want to use to correct the field's structure and choose **OK**.

   Edit the existing structure: Allows you to change the structure yourself. Select this option only if you are familiar with the structural elements of the database file you are using, or you do not have a similar database file whose structure you could import.

TIP *Editing the existing structure is much easier if you have a printed copy of the original file to use as a reference.*

   Import the correct structure from another dBase file: Allows you to import a structure from a similar database file that is not damaged. This method is much easier than editing a structure manually.

4. Follow the instructions for editing the existing structure or importing the correct structure from another dBase file in the appropriate sections of this chapter.

Editing the Existing Structure

1. Select **Edit the existing structure** and choose **OK**.
2. Adjust the data to locate the first field of the first record in the file and choose **OK**.

   To adjust the data, use the arrow keys or click the arrow buttons until the first character of the first record appears in the upper-left corner of the box. You may have to skip over some meaningless characters and field names to find the correct location.

   If you know the first text characters in the file, you can locate them quickly by selecting **Search**. In the Search for String dialog box, enter the document's first text characters, select the appropriate search options, and choose **OK**.

Forward search in the File: Searches for the text string you enter from the current position forward.

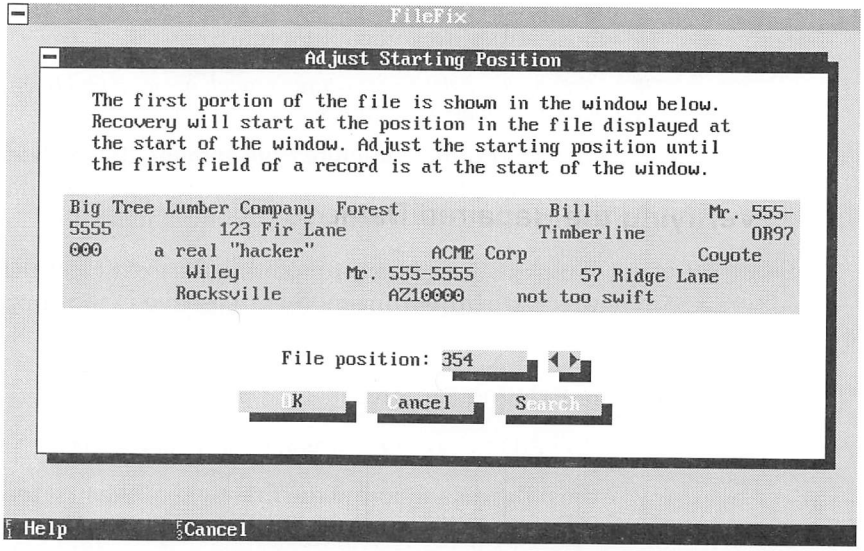
Backward search in the File: Searches for the text string you enter from the current position backward.

Case Sensitive Search: Searches for an exact match of the text string you enter.

3. Verify that the record size is correct and choose **OK**.

   When the record size is correct, the first character of each record aligns with the left side of the window, and the data forms neat columns.

   To adjust the record size, use the arrow keys or click the arrow buttons until the information is aligned correctly.


FileFix
Adjust Starting Position
The first portion of the file is shown in the window below.
Recovery will start at the position in the file displayed at
the start of the window. Adjust the starting position until
the first field of a record is at the start of the window.
Big Tree Lumber Company Forest Bill Mr. 555-
5555 123 Fir Lane Timberline OR97
000 a real "hacker" ACME Corp Coyote
Wiley Mr. 555-5555 57 Ridge Lane
Rocksville AZ10000 not too swift
File position: 354
OK
Cancel
Search
F1 Help
F3 Cancel

4. Adjust the data and field-name alignment for each field as necessary.

   The data in each field of the record should be aligned with its field name.

   If a field is not aligned, select it and use the arrow keys or click the arrow buttons to shift its width until the data and field name line up correctly.

   You can use the Name, Type, and Decimals text boxes to change the name, data type, and number of decimals for the selected field. In the Type text box, you can use ↑ and ↓ to scroll through the available data types.

If necessary, you can add a field by selecting the field above where the new field should be and choosing **Add**. Enter the field name, type, width, and decimals into the text boxes.

You can also delete a field by selecting it and choosing **Delete**.

5. Choose **OK** when all field information is correctly aligned.

   If the message "The sum of the field sizes does not agree" or "The field definitions do not agree" appears,

   ▶ Choose **No**, then choose **Revise** and repeat this procedure (beginning with step 2) until the message does not appear.

Importing the Structure from Another File

1. Select **Import the correct structure from another dBase file**, then choose **OK.**
2. Select the file whose structure you want to import and choose **OK**.

   The field structure from the file you select replaces the structure in the repaired file.

   You can review the imported structure by choosing **Review**.

Verifying the Repaired Database File

After you repair a damaged database file, exit from FileFix and try to load it with the appropriate database program.

WARNING Don't delete the original damaged file until you verify that you can load the repaired file and that it contains all the data that you can recover.

Once you repair a database file successfully, you need to change the .FIX extension to the extension used by the program that created the original file.

After loading the repaired file successfully, re-enter any data that was not recovered.

If You Cannot Load the Database File

If you cannot load a repaired database file, select a different repair option, either **Display Damaged Records Before Fixing** or **Display Each Record** and try again.

If you still cannot load the repaired database file, you can repair the file header information manually. See "Repairing a dBase File Header" earlier in this chapter for more information.

Repairing WordPerfect Files

FileFix can automatically repair most types of damage to WordPerfect text files.

A WordPerfect file contains a file prefix, text that appears on the screen, and control codes that determine the way the text appears when printed or displayed on a monitor (for example, centered headings or boldface characters). WordPerfect files can also contain graphic characters and information imported from other programs.

WordPerfect Repair Options

Repair File Prefix: Builds a new prefix for the file. All prefix information (such as fonts and special formatting) is lost and replaced with an empty prefix. After repairing with this option on, run FileFix again with this option turned off to repair the body of the file.

NOTE *To avoid losing special formatting instructions and data, do not turn on the Repair File Prefix option unless you have already tried to repair the file unsuccessfully.*

Repairing a File Prefix

When the Repair File Prefix option is on, you have options for how you want to repair the file prefix.

Use the prefix from another WordPerfect Document: Lets you import a prefix from a valid WordPerfect file that matches the file you are trying to recover.

Create a new prefix: Lets you recreate the prefix information for the file manually.

Search Backwards for Codes: Lets you search backwards from your current position in the file to locate any control codes that belong in the document section of the file and not in the prefix. You can select this option in addition to either of the previous options.

Using the Prefix from Another Document

If you want to import a file prefix from a WordPerfect text file, with a format similar to the one you want to repair, begin in the WordPerfect Repair Options dialog box.

1. Select **Use the prefix from another WordPerfect Document** and choose **OK.**

2. Select the file name whose prefix you want to import and choose **OK.**

   The Adjust Starting Position dialog box shows FileFix's calculation as to where the prefix ends and the document section begins.

3. Locate the first field of the first record in the file and choose **OK.**

   If text you recognize begins in the upper-right corner of the window, FileFix has probably located the beginning of the document section of the file.

   To adjust the data, use the arrow keys or click the arrow buttons until the first character of the first record appears in the upper-left corner of the box. You may have to skip over some meaningless characters and field names to find the correct location.

   If you know the first text characters in the file, you can locate them quickly by selecting **Search**. In the Search for String dialog box, enter the document's first text characters, select the appropriate search options, and choose **OK**.

   Forward search in the File: Searches for the text string you enter from the current position forward.

   Backward search in the File: Searches for the text string you enter from the current position backward.

   Case Sensitive Search: Searches for an exact match of the text string you enter.

Creating a New Prefix

If you do not have another WordPerfect document with a similar format, you can create a new file prefix.

NOTE *When you create a new prefix, graphics, tables, special formats, and so forth are lost. The new document contains text only.*

1. Select **Create a new prefix** and choose **OK.**

   The Adjust Starting Position dialog box shows FileFix's calculation as to where the prefix ends and the document section begins.

2. Locate the first characters in the file and choose **OK.**

   If text you recognize shows in the window, FileFix has probably located the beginning of the document section of the file.

NOTE *The very first characters in your file may not be text. Instead, they may be control codes that appear in FileFix as meaningless characters. For this reason, if any text you recognize is in the window, FileFix has probably located the beginning of the file.*

To adjust the data, use the arrow keys or click the arrow buttons until the first character of the first record appears in the upper-left corner of the box. You may have to skip over some meaningless characters to find the correct location.

If you know the first text characters in the file, you can locate them quickly by selecting **Search**. In the Search for String dialog box, enter the document's first text characters, select the appropriate search options, and choose **OK**.

Forward search in the File: Searches for the text string you enter from the current position forward.

Backward search in the File: Searches for the text string you enter from the current position backward.

Case Sensitive Search: Searches for an exact match of the text string you enter.

Verifying the Repaired WordPerfect File

After you repair a damaged WordPerfect file, exit from FileFix, open WordPerfect, and try to open the file.

WARNING Don't delete the original damaged file until you verify that you can load the repaired file and that it contains all the data that you can recover.

Once you repair a WordPerfect file successfully, you need to change the .FIX extension to the extension used by your version of Word Perfect.

After loading the repaired file successfully, re-enter any text that was not recovered.

If You Cannot Load the WordPerfect File

If you cannot load a repaired WordPerfect file, select a the Repair File Prefix option and try again. See "Repairing a File Prefix" earlier in this chapter for information.

Command-Line Options

Use the following command syntax at the DOS prompt:

```
FILEFIX  [filename] [/?] [/VIDEO]
```

NOTE *There are additional command-line options that you can use to control program display and mouse operation. See the* Global PC Tools Command-Line Options *chapter in* Part 4 General Reference *in this volume or type* `FILEFIX /VIDEO`

Option	What It Does
filename	Specifies the file to be repaired.
/?	Displays command-line help for FileFix options.
/VIDEO	Displays command-line help for FileFix program display and mouse options.

DiskEdit

DiskEdit provides access to critical areas of the disk that DOS usually keeps hidden from view. Using this facility, you can change things such as the starting and ending clusters of files, the location of disk partitions, and boot information. If you need to work with disks that DOS cannot recognize, DiskEdit can bypass DOS entirely and let you access your disk at a physical level.

Here's what you'll find in this chapter:

- Information on when to use DiskEdit, how to start and configure it, and how to work with DiskEdit windows and objects.
- **Using the Directory Editor** explains how you can view and edit directory entries.
- **Using the Hex Editor** explains you can view and edit sectors, clusters, and files.
- **Using the Boot Record Editor** explains how you can view and edit the drive identification information found in the Boot Record.
- **Using the FAT Editor** explains how you can view and edit cluster information in the File Allocation Table (FAT).
- **Using the Partition Table Editor** explains how you can view and edit Partition Table data that DOS uses to divide the disk.
- **Fixing Disk Problems with DiskEdit** describes how you can use DiskEdit to remove undeletable files and retrieve data from bad disks.
- **Command-Line Options** explains how you can change DiskEdit's video display characteristics and other startup settings.
- **Disk Reference** provides a brief guide to basic disk concepts. Refer to this section if you need background information on disk hardware, DOS partitions, or the File Allocation Table (FAT).

When Should You Use DiskEdit?

Disk Repair: If you need to repair a disk, start with Central Point's DiskFix, a program that provides a "hands-free" solution to the vast majority of disk problems. If the damage is so extensive that DiskFix cannot repair the disk, you may want to use DiskEdit to troubleshoot the problem manually. (See "Fixing Disk Problems with DiskEdit" later in this chapter.)

Disk Exploration: DiskEdit is the ideal tool if you want to explore the dark recesses of your disk. By default, DiskEdit runs in a read-only state so that you can safely examine any area of the disk that interests you.

Accessing non-DOS Partitions: DiskEdit's physical drive option lets you access every physical sector on the disk. With this feature, you can examine data on non-DOS partitions or damaged partitions DOS can no longer recognize.

Before You Use DiskEdit

If you aren't familiar with basic disk concepts, spend a few minutes reading "Disk Reference," the final section in this chapter. If you intend to make changes to the partition table or other critical areas of the disk, you should have your emergency disk handy.

Starting DiskEdit

You can run DiskEdit from PC Tools Desktop or from the DOS command line.

- Choose **Disk Editor** from the Disk menu in PC Tools Desktop.

  If you have not specified DiskEdit as the default disk editor, choose **Configure Editors ➤ Disk Editor** from the Configure menu.

  or

  From DOS, type

  DE [Enter]

  If a password has been assigned using PC Config, enter it and choose **OK**.

DiskEdit supports several command line options. For information on these, see "Command Line Options" later in this chapter.

WARNING Do not write changes when you run DiskEdit from multi-tasking or task-switching environments such as Microsoft Windows, Quarterdeck's DESQview, or Task Switcher in PC Tools. Although you can safely examine any area of the disk under these environments, writing changes can cause unpredictable results.

Configuring DiskEdit

Use the **Configuration** command in the Tools menu to control the following settings:

Read Only: Disables the **Write changes** and **Write object to** commands to prevent you from making changes to data on the disk.

Sync FATs: Ensures that both copies of the FAT remain identical whenever you make changes to one copy. If you don't want your changes to always apply to both copies of the FAT, you can disable this option and synchronize the FATs using the **Resync FATs** command in the Tools menu.

Auto View: Provides the most appropriate viewer for a selected sector object, based on the first sector in that object. If you prefer to always view selected sectors in Hex, turn off this option.

Hyper Links: Lets you switch between linked objects by pressing Enter. For more information on DiskEdit's linking feature, see the "Linking Between Objects" section later in this chapter.

Quick Exit: Disables the Exit prompt for a quick exit.

When you quit DiskEdit, you are prompted to save the current configuration. In addition to Configuration command settings, DiskEdit also saves the window status (single or split) and the window link status (on or off).

Working with DiskEdit Objects

DiskEdit's basic unit of data is the *object*. Examples of DiskEdit objects include files, directories, and clusters as well as critical areas of the disk such as the FAT, the Partition Table, and the Boot Record.

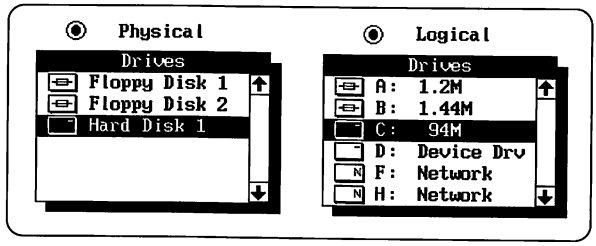
Selecting Objects

The commands in the Select menu allow you to select DiskEdit objects for editing and viewing. The specific command you use will often depend on how much information you have about the data. For example, if you don't know the file name containing the data you want to view or edit, you may need to select all the sectors on the disk and then search for a specific string.

One thing to keep in mind is the difference between *selecting* an object (using the Select menu) and *viewing* an object (using View menu commands). DiskEdit's viewers only affect the display format of an object that is already selected. To open a specific object for viewing or editing, use the Select menu commands.

Selecting Drives: Physical versus Logical

Using the **Drive** command in the Select menu, you can access a drive as a physical or logical device:



Accessing drives physically versus logically

It's usually more convenient to access your disk as a logical drive because it allows you to work with DOS partitions, network drives, and drives that require device drivers. Accessing your disk as a logical drive also allows you to view the disk's directory entries, boot sector, FAT copies, and other areas with DiskEdit's special editors.

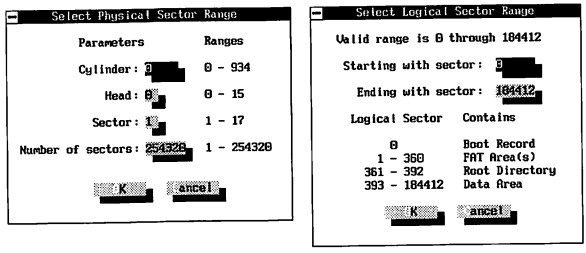
The main purpose of the physical drive option is to give you low-level access to the drive so you can select any sector on the disk. Accessing your drive this way may be required if the drive has been damaged, if you want to examine non-DOS partitions on the drive, or you need complete access to the Master Boot Record.

Although the physical drive option allows you to open any sector on the disk, you lose access to most DOS objects using the Select menu. To edit DOS objects on a physical drive, you must manually search through the disk's physical sectors until you find the data you need. Once you have located the data, you can then select the most appropriate viewer/editor.

You can also have DiskEdit automatically access all drives as physical devices by starting the program with the /P parameter. Use this parameter if DiskEdit cannot access the drive normally because the disk's directory structure is damaged.

Selecting Sectors

DiskEdit allows you to view and edit both physical and logical sectors using the **Physical Sector** and **Sector** commands in the Select menu:



Use the **Physical Sector** command when you need to access areas of the disk that are off limits to DOS such as non-DOS partitions, damaged partitions, and the Master Boot Record. Use the **Sector** command when you need to access logical sectors. (For more information on the differences between these two types of sectors, see the "Disk Reference" section later in this chapter.)

Viewing and Editing Objects

Once you select an object, DiskEdit reads the data and displays it using its default editor for that object:

Object	Default Editor/Viewer
Directory	Directory
File	Hex
Cluster	Hex (see note)
(Logical) Sector	Hex (see note)
Physical Sector	Hex
Partition Table	Partition
Boot Record	Boot
FAT and FAT copy	FAT
Memory	Hex

NOTE *If **Auto View** is on, DiskEdit provides an appropriate editor for a selected sector or cluster object, based on the first sector in that object. If you prefer to always view selected sectors in Hex view, turn off **Auto View** in the Configuration menu.*

At the top of the window, DiskEdit displays the name of the object and the current cursor position (Offset) in decimal and hex form. In the main area of the window, DiskEdit displays a series of data fields you can edit, copy, paste, or fill. If the object is longer than one sector, you can scroll through it one screen at a time.

Linking Between Objects

DiskEdit's link feature provides a convenient way to switch between related objects. For example, if you examine a cluster in the Hex editor from the file C:\SPREAD\ACCOUNT.WKS, two links are available from the Links menu. If you choose the **Directory** link, DiskEdit switches to the SPREAD directory with ACCOUNT highlighted. If you choose the **Cluster Chain (FAT)** link, DiskEdit switches to the FAT with the cluster chain for ACCOUNT highlighted.

DiskEdit's Hyper Links option provides a shortcut to linking between objects. When Hyper Links is on, you can select an item and press Enter or double-click to make the default link:

Editor	Selected Item	Default Link
Directory	File entry	Cluster (first in file)
Directory	Directory entry	Directory
FAT	File entry	Cluster
FAT	Directory entry	Directory
Hex	Cluster data	Directory
Partition	Primary DOS partition entry	Boot record
Partition	Extended DOS partition entry	Partition Table

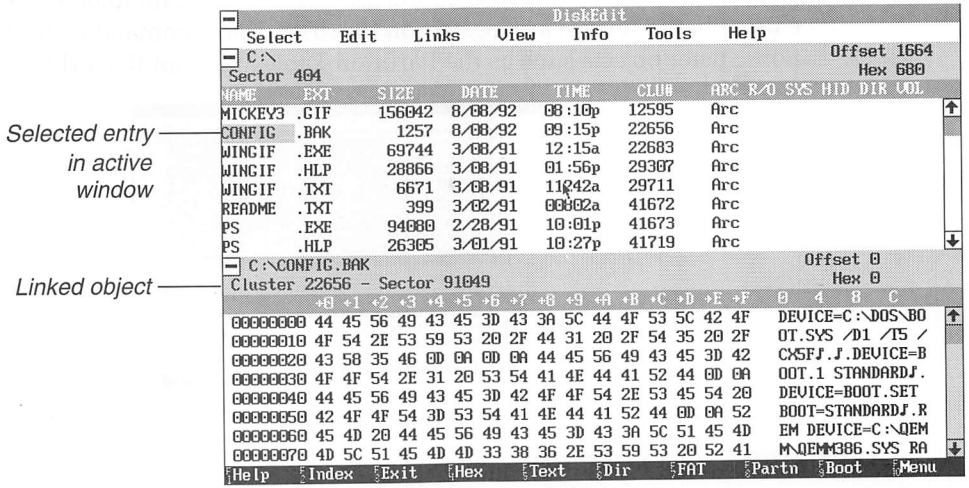
If more than one link is possible, use the Link menu commands to make alternate links.

DiskEdit also supports object linking between two open windows, a useful feature if you want to browse through a directory or FAT and see the data each entry points to.

To dynamically link two DiskEdit objects:

1. Select the first object using the Select menu.
2. Choose **Split Screen** in the View menu to bring up a second window.
3. Choose **Window** in the Links menu to enable the Windows link.

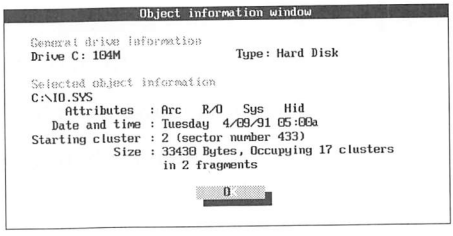
The inactive window displays the object linked to the selected entry in the active window.



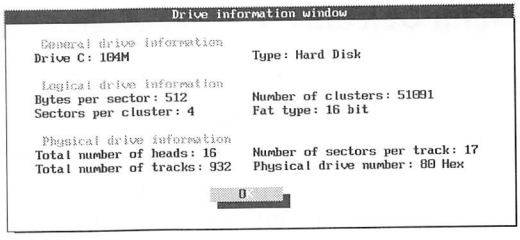
TIP *Consider starting DiskEdit with the /50 or /43 video option if you work with split screens. These display options can double the effective size of DiskEdit windows.*

Displaying Object Information

You can get information about the object in DiskEdit's active window by choosing the **Object Info** command under the Info menu:

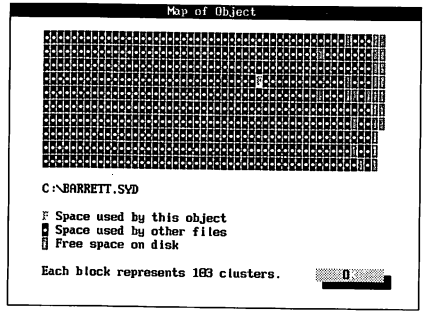


To view the characteristics of the current drive, choose the **Drive Info** command under the Info menu:



Mapping the Location of Objects

Use DiskEdit's **Map of object** command in the Info menu to determine where cluster-based objects are located on the disk. (The command is disabled for non-cluster objects such as the Partition Table and Boot Record.)



Comparing Two Objects

When DiskEdit's window is split, you can select an object in each window and then compare them.

1. Select the first object using the Select menu.
2. Choose **Split screen** from the View menu and then click on the second window to activate it.
3. If Windows linking is on, turn it off using the **Window** command in the Links menu.
4. Select the second object from the Select menu.
5. Select **Compare Windows** from the View menu.

DiskEdit then starts a byte-by-byte comparison of the two objects. If a single byte is different, DiskEdit stops the search and highlights the different byte in the active window. To continue the search, select **Compare Windows** again. DiskEdit restarts the search where it left off (the current cursor position) and continues until it finds the next different byte.

Searching Objects

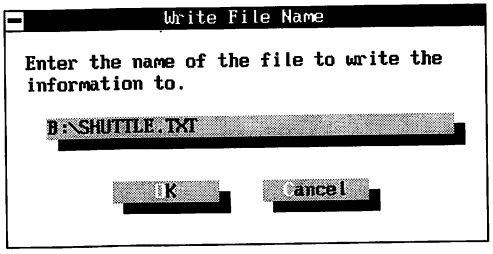
Using the **Search** command in the Tools menu, you can search an object for a string of characters, either hexadecimal or ASCII, and repeat the search until you find the characters or determine that they are not on the disk.

NOTE *Hex view is usually the best view to use when searching for data, since other viewers often translate the original data into more understandable form.*

When you initiate a search, DiskEdit starts from the current cursor location and stops at the end of the last sector in the object. You can repeat the search by choosing **Repeat Search** from the Tools menu.

Writing and Printing

- To write an object to a file, cluster, sector, or physical sector, choose **Write object to** from the Tools menu and then select the type of object you want to write. You can write files to other disks by specifying the drive letter in the path:



- To print an object to a file or printer, choose **Print object** on the Tools menu and select the format you want. If you output to a printer, the output is directed to LPT1.

Working with DiskEdit Windows

DiskEdit windows contain explanatory text and a series of editable fields containing the disk data. Using the Edit commands, you can mark, copy, or fill the data in these fields.

Marking Blocks

DiskEdit allows you to mark blocks of data, using the keyboard or the mouse. Once you have marked a block, you can copy or fill that area.

- To mark data using the keyboard, position the cursor at the start of the block and select **Mark Block** from the Edit menu.

  You can then use the arrow keys or Pg Dn to extend the selection.

  or

- To mark data using the mouse, click with the left mouse button at the start of the block and drag through the block to the end.

Copying and Pasting

- To copy data from DiskEdit object fields, select the data, using the mouse (or using the **Mark Block** on the Edit menu) and then choose **Copy to clipboard** from the View menu.
- To paste clipboard data over an object, select the field that you want to begin the paste operation from, and then use the **Paste from clipboard**.

NOTE *The DiskEdit clipboard holds a maximum of 4K of data. If you need to work with more data than this, use DiskEdit's* ***Write Object*** *command instead.*

Filling a Block

You can fill a marked block with a specified hex value, using the following procedure:

1. Choose **Fill block** from the Edit menu.
2. Choose the character you want from the ASCII table and press Enter.

   DiskEdit fills the entire block with the character.

NOTE *If the fill crosses a sector or cluster boundary, DiskEdit prompts you to write the change. Once data has been written, you cannot Undo it.*

Working with Split Windows

It is often convenient to have two DiskEdit windows open. For example, you could copy part of one file to another or display both copies of the FAT simultaneously.

To display a second screen:

- Choose **Split Screen** from the View menu.

  or

  Click the close box of the main window.

  or

  Press Ins.

To remove a second screen:

- Deselect **Split Screen** from the View menu.

  or

  Click the close box of the main window.

  or

  Press Del.

When a second window appears, the following commands become available:

- Choose **Switch Windows** from the View menu to change the active window.
- Choose **Resize Window** from the View menu and press ↑ or ↓ to expand or contract the current window.

To resize the screen using the mouse, click the top (non-data area) of the second window and drag.

- Choose **Compare Windows** from the View menu to find the differences between two objects.
- Choose **Window** from the Links menu to set up a dynamic link between two windows. For more information on this feature, see "Linking Between Objects" earlier in this chapter.

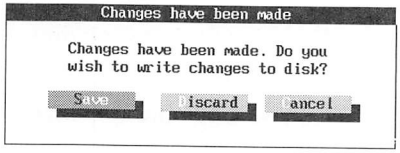
Function Keys

The following function keys are available in DiskEdit:

Function Key	Description
F1 Help	Provides online help.
F2 Index	Shows the DiskEdit help index.
F3 Exit	Exits from the DiskEdit program.
F4 Hex	Selects the Hex editor.
F5 Text	Selects the Text viewer.
F6 Dir	Lets you select a directory to view or change.
F7 FAT	Selects the FAT editor.
F8 Partn	Selects the Partition Table editor.
F9 Boot	Selects the Boot Record editor.
F10 Menu	Activates the menu bar.

Saving and Undoing Changes

DiskEdit prompts you to save changes when you select a new object or make changes across multiple sectors:



- To save changes manually, choose **Write changes** from the Edit menu.

DiskEdit's **Undo** command allows you to make up to 512 changes in a sector.

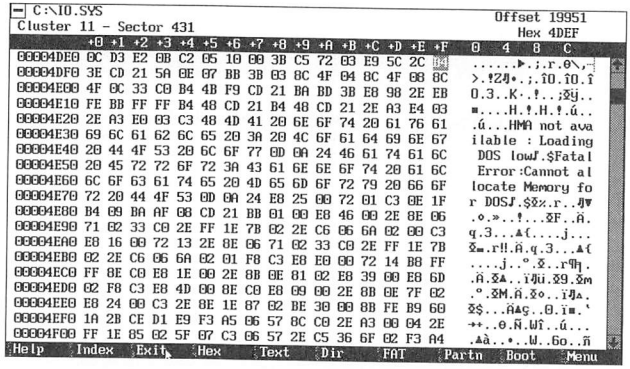
Using the Hex Editor

The Hex editor is the default editor for sectors, clusters, and non-text files. For information on selecting a range of logical or physical sectors to view with the Hex editor, see "Selecting Objects" earlier in this chapter.

- To use the Hex editor, choose **Hex** from the View menu.

The Hex Editor Window

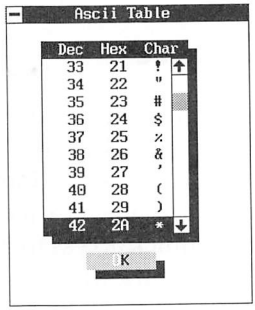
The Hex editor displays both a hexadecimal and ASCII representation of the selected object. The Hex editor, like DiskEdit's other editors, shows the current cursor position (Offset) in both ASCII and hex as well as the file, cluster number, and sector number when applicable.



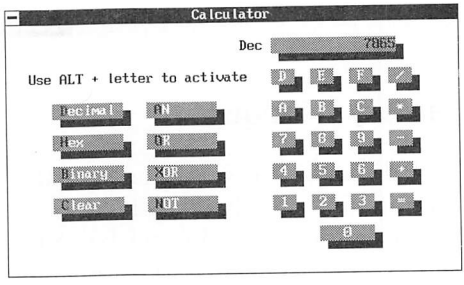
NOTE *By default, DiskEdit remaps several extended ASCII characters for use as scroll bars, close boxes, and other interface elements. If you want to display the standard ASCII character set, start DiskEdit using the /NF option.*

Changing Data

You can change data in either the hex or ASCII areas of the window. Your changes overwrite existing data. If you need to translate hex or ASCII codes, choose **ASCII Table** from the Tools menu:



DiskEdit also provides a programmer's calculator in the Tools menu that allows you to translate easily among decimal, hexadecimal, and binary. To convert a number, select the number base of the number to convert, enter the number, and then select the number base to convert to.



In addition to converting numeric data, you can also use the programmer's calculator to perform logical operations on pairs of binary numbers:

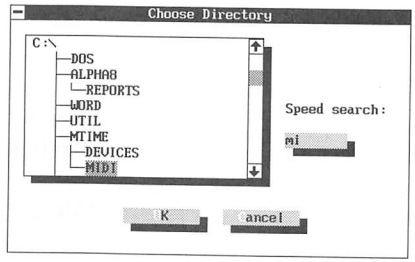
1. Select **Binary**.
2. Enter the first binary number.
3. Select the logical operation (AND, OR, XOR, NOT).
4. Enter the second binary number and then select **=**.

Using the Directory Editor

DiskEdit's Directory editor allows you to view and edit DOS directory entries. Since directories store the starting clusters of DOS files, the Directory editor is often useful in recovering files manually.

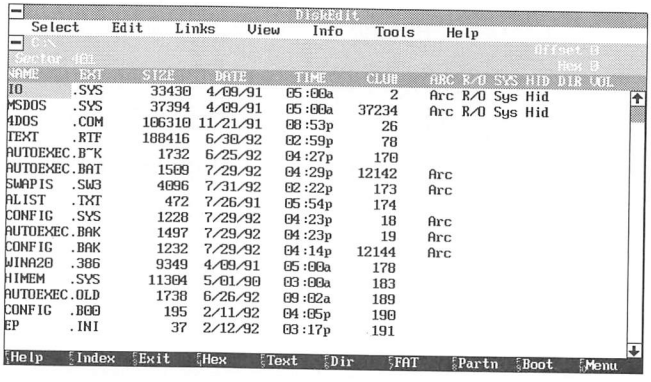
Selecting Directories

At startup, DiskEdit opens the current directory. To select a different directory, you can select an available directory entry in the window and press Enter. You can also use the **Directory** command in the Select menu to open directories. The dialog box it displays lists every directory on the current drive and provides quick access to directories by requiring you to type only the first few characters of the directory name:



The Directory Window

DOS directories are essentially small, hidden files that contain entries for each file and directory that they hold. Entries are 32 bytes long, which the Directory editor divides into a dozen labeled fields. At the top of the window, DiskEdit shows the current cursor position (Offset) in both ASCII and hex as well as the directory and sector number. The starting cluster number of the directory is also shown in this area (except for the root directory).


DiskEdit
Select Edit Links View Info Tools Help
C:\
Sector 461
Offset 0
Hex 0
NAME EXT SIZE DATE TIME CLUS ARC R/O SYS HID DIR VOL
IO .SYS 33430 4/09/91 05:00a 2 Arc R/O Sys Hid
MSDOS .SYS 37394 4/09/91 05:00a 37234 Arc R/O Sys Hid
4DOS .COM 106310 11/21/91 08:53p 26
TEXT .RTF 188416 6/30/92 02:59p 78
AUTOEXEC.BAK 1732 6/25/92 04:27p 170
AUTOEXEC.BAT 1509 7/29/92 04:29p 12142 Arc
SWAPIS .SW3 4096 7/31/92 02:22p 173 Arc
ALIST .TXT 472 7/26/91 05:54p 174
CONFIG .SYS 1228 7/29/92 04:23p 18 Arc
AUTOEXEC.BAK 1497 7/29/92 04:23p 19 Arc
CONFIG .BAK 1232 7/29/92 04:14p 12144 Arc
WINA20 .386 9349 4/09/91 05:00a 178
HIMEM .SYS 11304 5/01/90 03:00a 183
AUTOEXEC.OLD 1738 6/26/92 09:02a 189
CONFIG .B00 195 2/11/92 04:05p 190
EP .INI 37 2/12/92 03:17p 191
Help Index Exit Hex Text Dir FAT Partn Boot Menu

DOS directories are one or more clusters in length, depending on the number of entries they must store. DiskEdit displays an "Unused" label to indicate available entries. A tilde (~) character at the start of a file name indicates that the file was deleted.

In addition to the file's name and dates, DiskEdit displays the following information:

CLU#: Starting cluster number of the file.

ARC: Archive. If on, the file has not been backed up.

R/O: Read only.

SYS: System file.

HID: Hidden file.

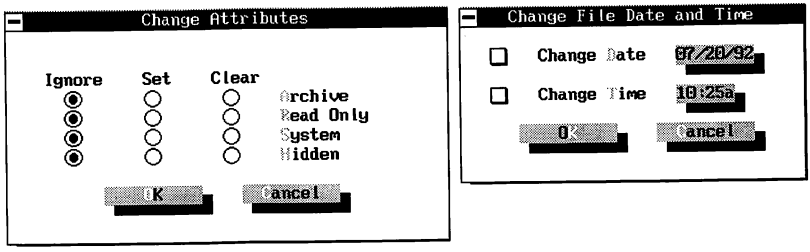
DIR: Directory.

VOL: Volume label.

Changing Data

There are several ways you can change data in the Directory editor:

- To change non-attribute fields, move the cursor to the data field and type over it.
- To change several date and attribute fields, mark those file entries you want to modify and use **Set Date and Time** or **Set Attributes** commands from the Edit menu:



- To change individual attributes, move the cursor to the attribute field and then press Spacebar.

The Directory editor, like DiskEdit's other editors, provides an **Undo** command that allows you to undo the last 512-byte changes to the sector.

Using the Boot Record Editor

A DOS Boot Record serves two basic functions. Its primary purpose is to load a short program (the boot code) and the two hidden DOS system files. In addition, the Boot Record also supplies DOS with a series of values which describe the boot drive's characteristics. Using DiskEdit, you can view and edit these values.

WARNING Use extreme caution before changing any Boot Record data. You should make a backup of the Boot Record to a file or have your emergency disk handy before you make any changes.

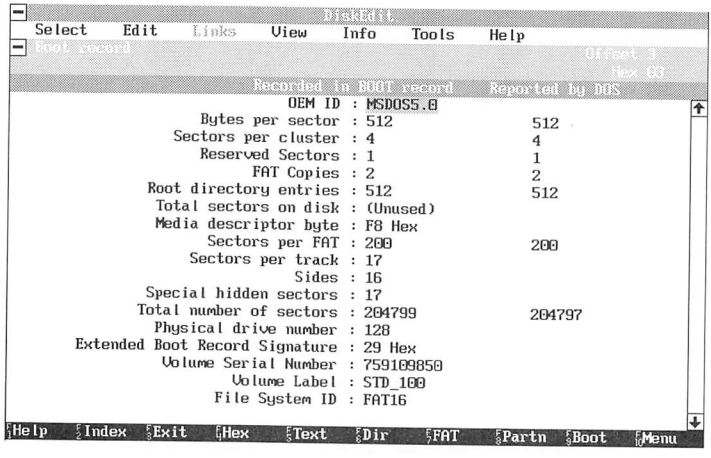
Selecting a Boot Record

All floppy and hard disks contain at least one Boot Record, even if they don't have DOS bootup files. For hard disks with multiple partitions, there is one DOS boot record for each partition. The Partition Table specifies which partition is the boot partition

1. To select a Boot Record, choose the logical drive you want to examine using the **Drive** command.
2. Choose **Boot Record** from the Select menu.

The Boot Record Window

The Boot Record editor displays two columns of data. The first column is editable and displays the data recorded in the Boot Record. The second column, Reported by DOS, shows you what values DOS is currently using.


DiskEdit
Select Edit Links View Info Tools Help
Boot record
Offset 3
Hex 03
Recorded in BOOT record
Reported by DOS
OEM ID : MSDOS5.0
Bytes per sector : 512 512
Sectors per cluster : 4 4
Reserved Sectors : 1 1
FAT Copies : 2 2
Root directory entries : 512 512
Total sectors on disk : (Unused)
Media descriptor byte : F8 Hex
Sectors per FAT : 200 200
Sectors per track : 17
Sides : 16
Special hidden sectors : 17
Total number of sectors : 204799 204797
Physical drive number : 128
Extended Boot Record Signature : 29 Hex
Volume Serial Number : 759109850
Volume Label : STD_100
File System ID : FAT16
Help Index Exit Hex Text Dir FAT Partn Boot Menu

OEM ID: Identifies the operating system/disk formatter.

Bytes per sector: Typically contains 512 bytes, although some third party partitioning software supports sectors with 1024 bytes or more.

Sectors per cluster: Contains a value based on the size of the disk. The larger the disk, the more sectors allocated to each cluster.

Reserved Sectors: Number of sectors in the partition that precede the FAT. A value of 1 is typical and the Boot Record itself usually resides here.

FAT Copies: The number is usually two.

Root directory entries: Typically contains 512 entries on a hard disk.

Total sectors on disk: For disks larger than 32 MB, this value is (Unused). The value is instead displayed in the Total number of sectors field.

Media descriptor byte: A one-byte value that identifies the disk's media. For 720K floppy disks; the value is F9 hex, for 1.44K floppy disks the value is F0 hex, and for hard disks the value is F8 hex.

Sectors per FAT: Number of sectors allocated to each File Allocation Table.

Sectors per track: Number of sectors in each track.

Sides: Number of heads (formatted disk surfaces).

Special hidden sectors: Number of sectors on the physical drive that come before the start of the partition.

Total number of sectors: On partitions smaller than 32 MB, this value is Unused. For partitions larger than 32 MB, this value refers to the total number of sectors on the partition.

Physical drive number: Refers to the drive's physical type:

- 128, 129, 130, and 131 usually designate hard drives.
- 0 usually designates floppy disks and other removable media.

The last four fields in the Boot Record window apply only to DOS 4.0 and later:

Extended Boot Record Signature : If this field is 29 hex, it indicates that the disk was formatted under DOS 4.x or later.

Volume Serial Number: Identification number created by DOS during disk formatting.

Volume Label: Internal disk volume label. Not the same as the standard DOS volume label.

File System ID: (DOS 4.0 and above) Either FAT12 or FAT16. A 12-Bit FAT provides enough entries for hard disks up to 18.5 MBs. A 16-Bit FAT provides enough entries for 65,636 clusters and hard disk sizes of 512 MBs.

Changing Data

You can change data in the Boot Record window by overwriting it. The Boot Record editor, like DiskEdit's other editors, provides an **Undo** feature that allows you to undo the last 512-byte changes to the sector.

Using the FAT Editor

DiskEdit's FAT editor lets you manually modify the selected drive's File Allocation Table. For general information on the FAT, see the "Disk Reference" section at the end of this chapter.

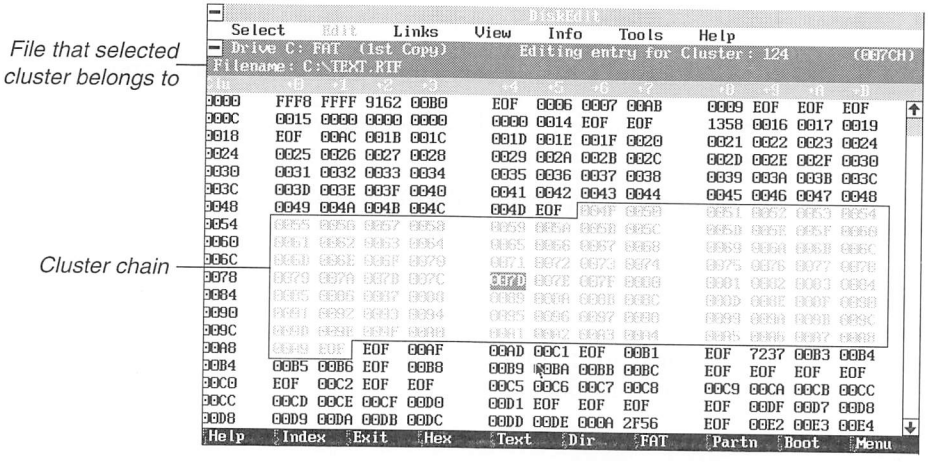
Selecting a FAT

Most disks contain two copies of the FAT. The first copy is used by DOS to manage files on the disk; the second copy is used as a backup.

1. To select a FAT, choose the logical drive you want to examine using the **Drive** command.
2. Choose **1st Copy of FAT** or **2nd Copy of FAT** from the Select menu.

The FAT Window

The FAT editor displays the FAT as a series of editable fields. Each field represents one FAT entry:


File that selected cluster belongs to
Cluster chain
DISKEDIT
Select Edit Links View Info Tools Help
Drive C: FAT (1st Copy) Editing entry for Cluster: 124 (007CH)
Filename: C:\TEXT.RTF
Help Index Exit Hex Text Dir FAT Partn Boot Menu

`2-FFF6` Next cluster number in the file.

`EOF` Last cluster in the file. The actual hex value is FFF8 or greater.

`0000` Available cluster (not used by any file).

`XXXX` Bad cluster. The actual hex value is FFF7.

When you select a single cluster in the FAT, DiskEdit highlights all the clusters used by the file (the cluster chain). You can use the + and – sign to move the cursor up and down the cluster chain. You can link to the file's directory entry by selecting a cluster and double-clicking or by pressing Enter.

Changing Data

FAT entries are changed by overtyping them. Be very careful to prevent creating a cross-link by allowing two cluster chains from different files to include a common cluster.

- To enter an EOF, type

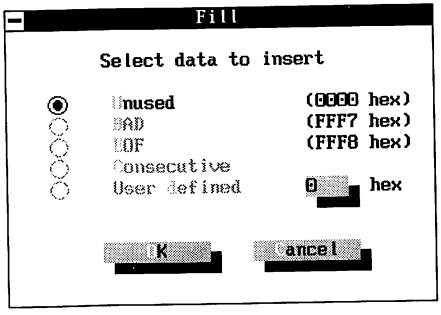
  `FFF8` (or the letter `O`)

- To enter BAD, type

  `FFF7` (or `X`)

If you need to make changes to several FAT clusters, you can use the special fill command provided for the FAT.

1. Mark the block of clusters you want to change.
2. Select **Fill Block** from the Edit menu.
3. Select the fill option you want:



- **Unused:** Fills the FAT entries with zeros to indicate that the clusters are unallocated.

- **BAD:** Fills the entries with FFF7 to indicate that the clusters should not be allocated to a file.
- **EOF:** Fills the entries with FFF8 to indicate an End of File.
- **Consecutive:** Fills the entries with consecutive hex values, starting from the value in the first marked FAT entry. Use this option to automatically create a new cluster chain.
- **User Defined:** Fills the entries with a specified hex value.

If you want changes in one copy of the FAT always to apply to the other copy, turn on **Resync FATs** using the Configuration command.

Using the Partition Table Editor

The Partition Table is perhaps the most important data structure on the disk. DOS uses it to define the logical division on the disk, the location of these divisions, and which of these divisions contains the system files to boot from.

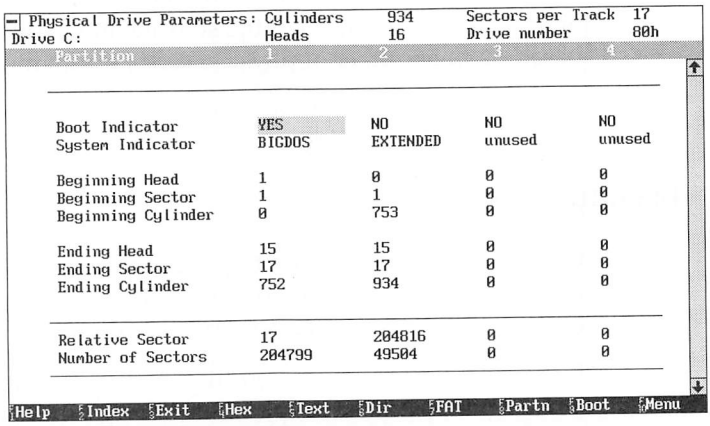
The best way to correct most Partition Table problems is to restore the data, using your PC Tools emergency disk. If you don't have an emergency disk or other backup of a good partition table, you can run DiskFix and have it repair the problems. Use DiskEdit's Partition Table editor in special situations when you need to correct partition data manually.

Selecting a Partition Table

There is a single Partition Table for each DOS partition on your hard disk. To open the partition table for a specific drive, use **Drive** to select the logical drive and then choose the **Partition Table** command.

The Partition Table Window

DiskEdit displays Partition Table data in the following format:


Physical Drive Parameters: Cylinders 934 Sectors per Track 17
Drive C: Heads 16 Drive number 80h
Partition 1 2 3 4
Boot Indicator YES NO NO NO
System Indicator BIGDOS EXTENDED unused unused
Beginning Head 1 0 0 0
Beginning Sector 1 1 0 0
Beginning Cylinder 0 753 0 0
Ending Head 15 15 0 0
Ending Sector 17 17 0 0
Ending Cylinder 752 934 0 0
Relative Sector 17 204816 0 0
Number of Sectors 204799 49504 0 0
Help Index Exit Hex Text Dir FAT Partn Boot Menu

Each column represents one partition; there are 10 entries for each partition.

Boot Indicator: Specifies which partition DOS should load. Only one of the partitions should be "Yes."

System Indicator: Indicates the partition type. There are four standard DOS partitions:

- **BIGDOS:** A partition larger than 32 MB that was created by DOS 4.x or later. (Sometimes referred to as "Huge.")
- **DOS-12:** A partition with a 12-bit FAT. Used in DOS partitions smaller than 18.5 MB.
- **DOS-16:** A partition with a 16-bit FAT. Used in DOS partitions that range from approximately 18.5 to 32 MB in size.
- **EXTENDED:** DOS Extended partition. Linking from an Extended entry jumps to the Extended Partition Table.
- **Unused:** Empty (unused) partition.

The Partition editor also recognizes the following non-DOS partitions:

- **HPFS:** High Performance File System used by OS/2.
- **Split:** SplitDrive partition.
- **SuperStor:** SuperStor compressed drive.
- **BBT:** UNIX (Bad Block Table).
- **XENIX:** XENIX partition.

If the Partition editor does not recognize the non-DOS partition, it displays "Unknown" in this field.

Beginning and Ending of the Partition: There are six fields in the Partition Table that store the starting and ending sectors of the partition. The Relative Sector entry stores the location of the starting and ending sectors of the partition, based on the number of physical sectors from the start of the disk.

TIP *You can simultaneously display all the Partition table data on your hard disk using DiskFix's /List option.*

Making Changes

Generally the best solution to partition problems is to restore from a backup of a good Partition Table. If you don't have an emergency disk or other backup of the Partition Table, try repairing the disk with DiskFix.

If there is no alternative to editing the Partition Table manually, be sure you make a printout or backup of the existing Partition Table. You should also have an emergency disk handy to boot from. To make a backup of the Partition Table:

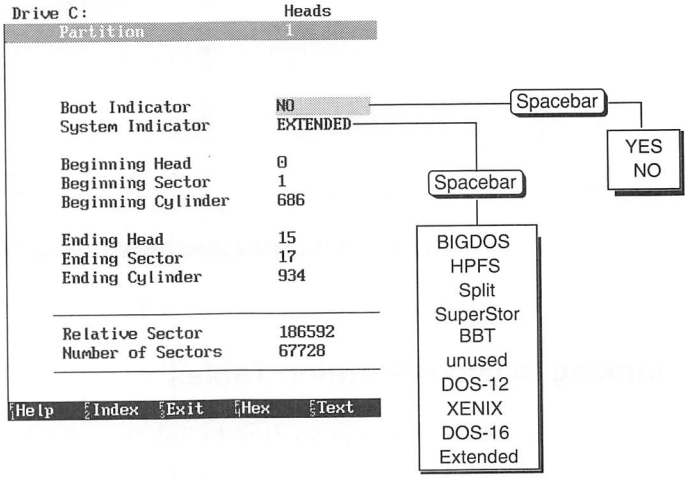
1. In DiskEdit, use the **Drive** command to select the disk as a logical disk.
2. Open the disk's Partition Table using the **Partition Table** command in the Select menu.
3. Make a backup of the Partition Table, using **Write object to,** and then select the file option. Save this copy to a floppy disk so you can have access to the partition data even if the hard disk becomes inaccessible.

To restore the data from this copy, select the file you created and write it to the location of the Partition Table.

Changing Boot and System Indicator Settings

The first two fields in the Partition Table specify if the system should boot from the partition and what type of partition it is.

- To change the Boot Indicator or System Indicator fields, select the field and press Spacebar to cycle through the available options:



Only one partition should be designated as the boot partition. For an explanation of the different System Indicator settings, see "The Partition Table Window" section earlier in this chapter.

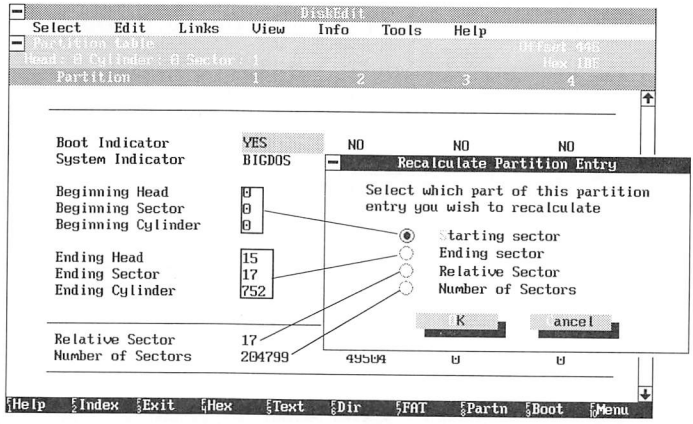
Changing Partition Table Data

You change the remaining Partition Table fields (Beginning Head through Number of Sectors) by overtyping the data. If you only know some of these settings, you can choose **Recalc Partition** to generate the missing entries. For example, you could manually enter the starting sectors (Beginning Head, Beginning Sector, and Beginning Cylinder) and the ending sectors (Ending Head, Ending Sector, and Ending Cylinder) and then use **Recalc Partition** to supply the Relative Sectors and Number of Sectors fields.

To recalculate Partition Table data:

1. Choose **Partition Table** from the Select menu.
2. Position the cursor anywhere in the partition that you want to recalculate. The value in the field need not be empty for DiskEdit to recalculate it.
3. Choose **Recalc Partition** from the Tools menu.

4. Select the value you want to recalculate: Starting sector, Ending sector, Relative Sector, or Number of Sectors.

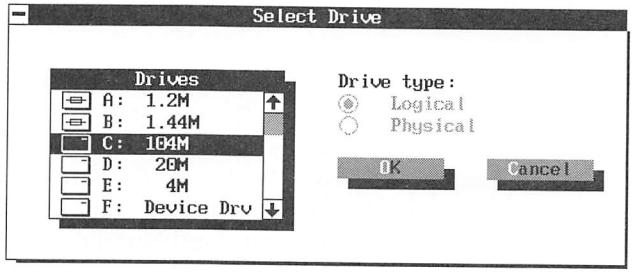


5. Choose **Write changes** from the Edit menu.

Linking to Other Partition Tables

Use the following procedure to link from the Master Boot Record partition table to other partition tables on the disk:

1. Verify that the Hyper Links feature is on in the **Configuration** option.
2. Select the MBR partition table by choosing drive C (your primary DOS partition) using the **Drive** command:



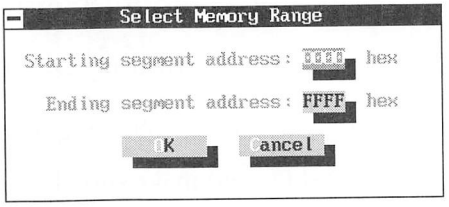
3. Choose **Partition Table** from the Select menu.
4. Highlight any field in an Extended partition and press Enter.

   You can repeat this final step until you reach to the last partition on the disk.

Displaying the Contents of Memory

DiskEdit enables you to view the contents of memory:

1. Choose **Memory Display** from the Select menu.
2. Enter the starting and ending segment addresses, then choose **OK**.



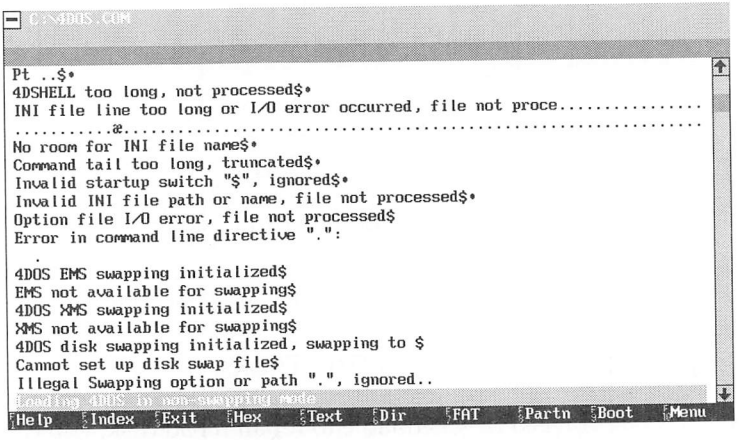
The default memory range is 0000 to FFFF, a range of 1024 K or 1 MB.

The Memory Window

Each line in the window displays 16 bytes of RAM. To prevent memory corruption problems, DiskEdit does not allow you to change this data. You can, however, copy this data or write it to the disk, using **Write object to**.

Using the Text Viewer

Use DiskEdit's Text viewer to view your data formatted with line breaks. For example, if you wanted to look at the text strings in an executable file, you could select the file and change the viewer from Hex (F4) to Text (F5):



You cannot use the Text viewer to edit information.

Fixing Disk Problems with DiskEdit

The following procedures show you how to fix disk problems manually using DiskEdit. Before trying to solve the problem with DiskEdit, however, try DiskFix first to see if it can automatically repair the disk.

Removing Files You Cannot Delete

If you cannot delete a file using DOS DELETE, the file may not be using the standard ASCII character set or its read-only attribute may be turned on. To remove the file, use the following procedure:

1. Run DiskFix and make sure there are no problems on the disk.
2. Run DiskEdit and select the file's directory with the **Directory** command.
3. Find the file's entry in the directory.

   If the file's read-only attribute is on (R/O), select that attribute entry and press Spacebar. Quit DiskEdit and try deleting the file from DOS.

   If the read-only attribute was off, continue with the next step.
4. Move the cursor to the start of the file's name. Overwrite the file name with a new name and then choose **Write changes** from the Edit menu.
5. Exit to DOS and try to delete the file. If you still can't delete the file, bring the file back up under the Directory editor and move the cursor to the first character of the file's name.
6. Choose **Hex** from the View menu and type `E5`, the character DOS uses to designate deleted files.
7. Switch back to the Directory editor and write the change when DiskEdit prompts you.
8. In the Directory editor, verify that the file now starts with the ~ character.

   If it does not, repeat step 6.
9. Exit to DOS and then run DiskFix.
10. In DiskFix, choose **Repair a Disk** for the drive with the file. Use DiskFix to fix the lost chains and then delete them.

Retrieving Data from Bad Disks

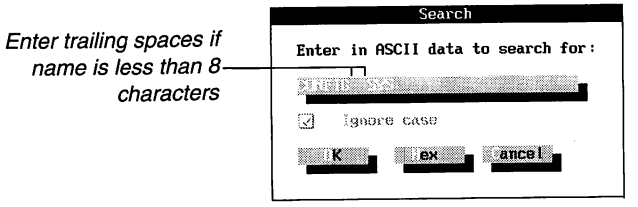
If DiskFix was unable to repair a bad disk, you can use DiskEdit to manually recover data from it, using the following three-part procedure.

Part 1: Locating the File's First Cluster

1. Select the **Configuration** command and turn off **Auto View**.
2. Use the **Drive** command to select the damaged disk as a logical disk.
3. Choose **Directory** from the Select menu and then look for the file's directory.

   If you find it, select the file's directory and then see if you can locate the file's name in the directory display. If so, record the file's size and starting cluster number (the CLU# field) and skip to Part 2.
4. If you couldn't locate the file's directory in step 3, choose the **Cluster** command in the Select menu and then read in every cluster.
5. Perform an ASCII search for the file name.

   Ignore the period between the name and the extension, but put trailing spaces after the name if it is less than eight characters:



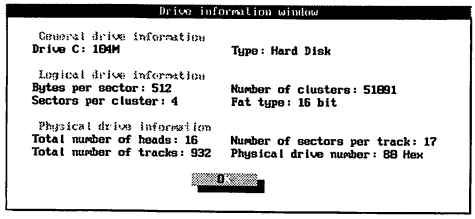
6. If you find the file's name, choose **Directory** under the View menu.

   If this view shows a directory, record the starting cluster number and file size and then go to Part 2. If the screen shows meaningless characters, search for another occurrence of the file name.
7. If you could not find the file's name, search for a unique ASCII string that you know is in the first part of the file.
8. Examine the data in the Text viewer.

   If the data isn't part of the file, continue searching. If it appears to belong to the first cluster, record the cluster number. If you think there are any remaining clusters in the file, skip to Part 2; if not, skip to Part 4.

Part 2: Determining the Number of Clusters in the File

1. Select **Drive Info** and examine the logical drive information.



2. Determine how many bytes are in each cluster by multiplying the *Bytes per sector* by the *Sectors per cluster*.

3. Compare the file size you found in Part 1 to the disk's cluster size.

   If the cluster size is greater, you have found the entire file and can skip to Part 4.

4. If there is more than one cluster in the file, you need to calculate how many clusters are in the file. To do so, divide the file size by the cluster size and round up the result. (For example, if the file were 25446 bytes and the cluster size was 2048 bytes, the file would occupy 13 clusters.) Continue to Part 3.

Part 3: Locating the File's Remaining Clusters

1. Select **1st Copy of FAT** and then look for the starting cluster number of the file.

   DiskEdit indicates this number at the top of the FAT window with the label "Editing entry for Cluster: xxx."

2. When you find the entry, select it and then try to follow the chain. Record all the numbers in the chain until you reach an EOF entry.

3. Check if the number of clusters in the file is what you calculated in Part 2.

   If they don't match, continue to step 4. If they do, skip to Part 4.

4. Use the **Cluster** command in the Select menu to read in every cluster that could be part of the object.

   To do so, enter the starting cluster of the file and the last cluster of the disk as the ending cluster.

5. Use the Hex editor to examine each cluster.

   Record the numbers of any cluster that looks like it belongs to the file.

Part 4: Saving the File to a Different Disk

1. Choose **Cluster** from the Select menu and enter the first cluster as the cluster range.

2. Choose **Write object to** and select the file option.

3. Give the file a name, using a path to a different drive.
4. Select the next cluster in the file by choosing **Cluster** from the Select menu.
5. Choose **Write object to** and select the file option once more.
6. Enter the name of the file you used in step 3.
7. Select the **Append** option.
8. Repeat steps 4-7 until you have entered all the clusters.

Command-Line Options

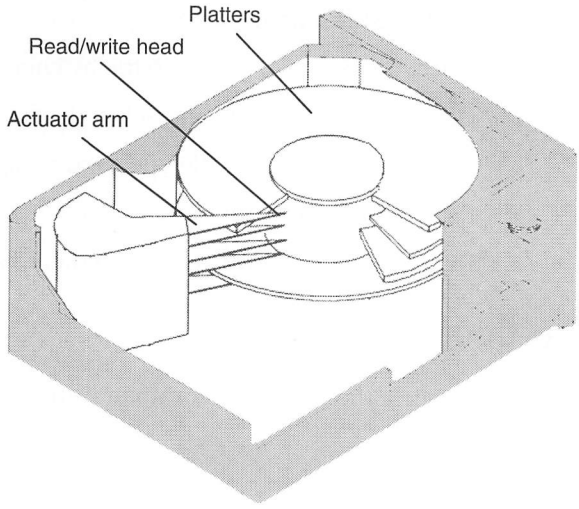
You can use the following command-line options when starting DiskEdit:

```
DE /drive /filename /P /W /VIDEO /?
```

Options	Description
`/drive`	Specifies DiskEdit's current logical drive.
`/filename`	Selects the specified file name as a DiskEdit object.
`/P`	Provides physical access to the disk by bypassing DOS.
`/W`	Overwrites read-only mode when you first start the program, enabling you to begin writing to the disk.
`/VIDEO`	Displays the range of video options you can use to control program display on your screen.
`/?`	Displays command-line help on screen.

Disk Reference

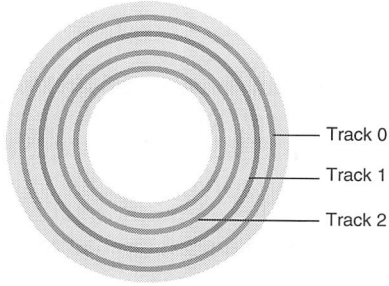
At the physical level, a hard disk consists of multiple metal disks, called *platters*, that are stacked inside an enclosure. A small electromagnet called a *read/write head* is suspended above each platter. The read/write head is attached to an actuator arm that allows the head to be moved ("stepped") across the platter. A motor rotates the platters so that magnetic patterns on the platter can be detected or changed by the disk heads.



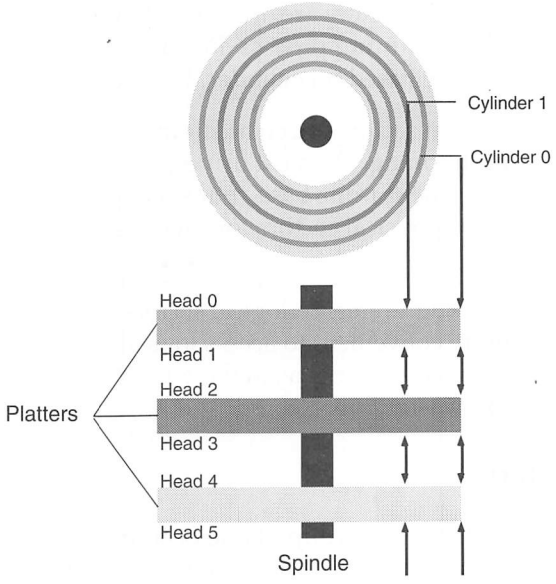
A hard disk typically has four or more platters. The surface of the platter is called a *head* or *side*. Since both sides of each platter are usually used to store data, there are generally twice as many heads as platters.

Tracks and Cylinders

A *tracks* is the concentric ring that the read/write head traces as it moves across the rotating platter. Tracks can be written on both sides of the disk except in the case of single-sided floppy disks. A 360K floppy disk only contains 40 tracks; hard disks can contain thousands.

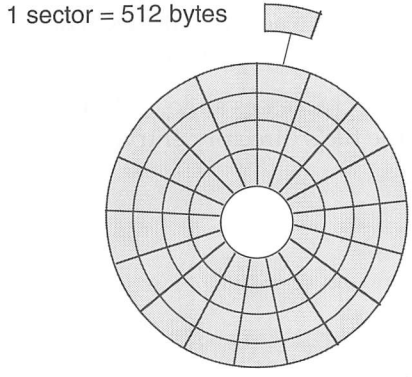


A *cylinder* is a group of tracks with the same number that span across multiple heads (disk surfaces). For example, on the three-platter hard disk shown below, cylinder 0 would contain data from a total of six tracks: (track 0, head 0), (track 0, head 1), (track 0, head 2), (track 0, head 3), (track 0 head 4), and (track 0, head 5).



Sectors

Sectors are the smallest unit on the disk that the disk controller can access. On hard disks, sectors are created during low-level formatting when each track on the disk is divided into units of 512 bytes. The number of sectors per track varies depending on the disk type.



One potentially confusing aspect about sectors is the difference between physical (also called *absolute*) sectors and logical sectors (also known as *relative sectors* or *DOS sectors*).

Physical sectors are always 512 bytes in length and are created as part of the manufacturing process. Physical sectors use a three-dimensional addressing scheme based on cylinder, head, and sector.

Logical sectors are created out of physical sectors during formatting or partitioning. On most drives, physical sectors are mapped into logical sectors on a one-for-one basis, but some partitioning schemes use multiples of two or more physical sectors for each logical sector.

DiskEdit allows you to access both physical sectors and logical sectors. (DiskEdit refers to logical sectors as *sectors*.) In most situations, you will find it more convenient to access logical sectors. The exception is when DOS cannot access the sectors as in the case of a damaged partition, non-DOS partitions, or the Master Boot Record.

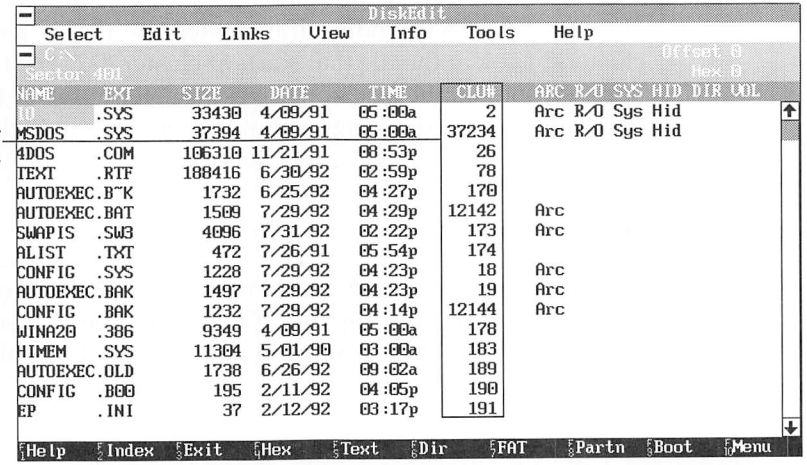
Clusters

A *cluster* is a group of one or more sectors which is the minimum amount of disk space that DOS can allocate to a file. For example, if you created a text file with a single character, the file would still require one cluster. The left over space is referred to as *slack* and is the reason the apparent file size can change when you copy files from media with different cluster sizes such as from a floppy to a hard disk.

File Allocation Table

DOS files are composed of individual clusters which are not necessarily contiguous. To access a file, DOS depends on two things: the file's directory and the file's entries in the FAT.

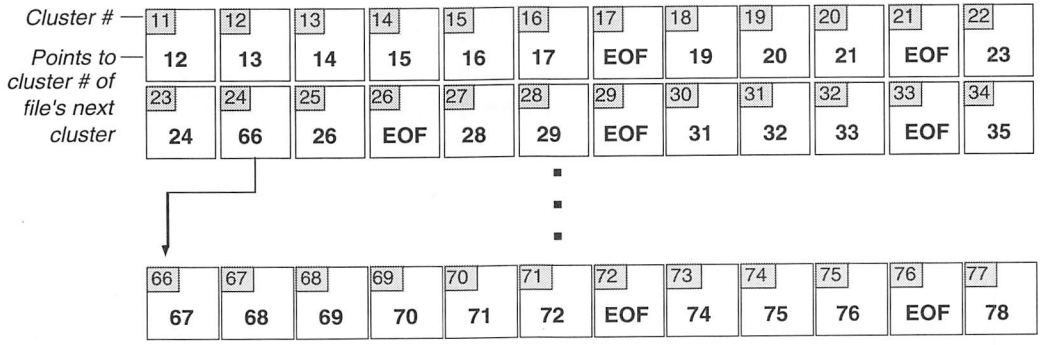
When DOS accesses a file, it starts by getting the file's first cluster number from the file's directory entry.


DiskEdit
Select Edit Links View Info Tools Help
C:\
Sector 401
Offset 0
Hex 0
NAME EXT SIZE DATE TIME CLU# ARC R/O SYS HID DIR VOL
IO .SYS 33430 4/09/91 05:00a 2 Arc R/O Sys Hid
MSDOS .SYS 37394 4/09/91 05:00a 37234 Arc R/O Sys Hid
4DOS .COM 106310 11/21/91 08:53p 26
TEXT .RTF 188416 6/30/92 02:59p 78
AUTOEXEC.B~K 1732 6/25/92 04:27p 170
AUTOEXEC.BAT 1509 7/29/92 04:29p 12142 Arc
SWAPIS .SW3 4096 7/31/92 02:22p 173 Arc
ALIST .TXT 472 7/26/91 05:54p 174
CONFIG .SYS 1228 7/29/92 04:23p 18 Arc
AUTOEXEC.BAK 1497 7/29/92 04:23p 19 Arc
CONFIG .BAK 1232 7/29/92 04:14p 12144 Arc
WINA20 .386 9349 4/09/91 05:00a 178
HIMEM .SYS 11304 5/01/90 03:00a 183
AUTOEXEC.OLD 1738 6/26/92 09:02a 189
CONFIG .B00 195 2/11/92 04:05p 190
EP .INI 37 2/12/92 03:17p 191
Help Index Exit Hex Text Dir FAT Partn Boot Menu

Starting cluster number

Next, DOS looks up this cluster number in the File Allocation Table. If the file is only one cluster in length, the FAT entry associated with that cluster is EOF (End of File) and DOS's search is over. If the file is larger than one cluster, the FAT entry for the first cluster will contain the file's second cluster number, the second cluster will contain the file's third cluster number and so on until an EOF appears. This sequence of FAT entries is known as a *cluster chain*.

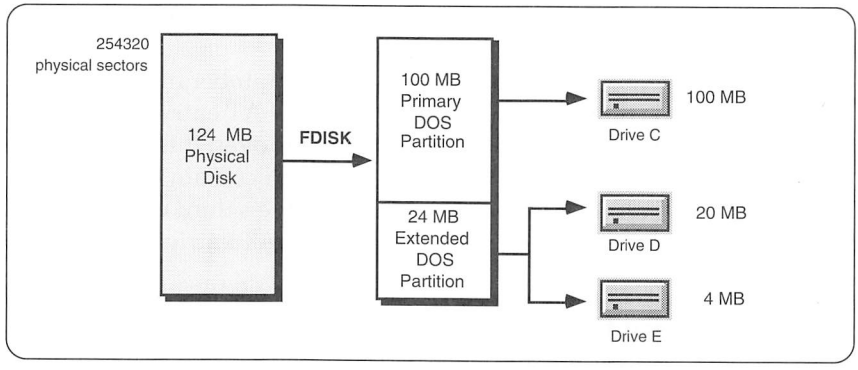
The following illustration shows a FAT with a four-cluster file starting at cluster #18. When DOS accesses this file, it finds its starting cluster in the file's directory entry and then examines the contents of this entry in the FAT. Since that entry is 19, DOS looks at the contents of cluster #19. In cluster #19, DOS finds that the next cluster is 20; in cluster #20 the next cluster number is 21. Finally, in cluster #21, an EOF is found and the process is complete.



How does the FAT handle a fragmented file, that is, a file with non-contiguous clusters? Look at the file that starts at cluster #22. The file's third cluster entry does not contain the next consecutive cluster number. Instead, it contains 66, the start of the second fragment of the file. The chain then continues until it reaches cluster #77 where an EOF is found.

Partition Table

Partition tables are used by DOS to divide a disk into one or more logical drives. For example, using the DOS FDISK utility (or some other low-level partitioning software), you could partition a 124 MB physical into three logical drives.



The partition table for the disk as a whole is stored in the Master Boot Record (MBR) which resides on the disk's first physical sector: Head 0, Cylinder 0, Sector 1. The MBR's partition table holds 1-4 partition entries. DiskEdit displays these entries in columnar form:

Physical Drive Parameters: Cylinders 934 Sectors per Track 17
Drive C: Heads 16 Drive number 80h

Partition	1	2	3	4
Boot Indicator	YES	NO	NO	NO
System Indicator	BIGDOS	EXTENDED	unused	unused
Beginning Head	1	0	0	0
Beginning Sector	1	1	0	0
Beginning Cylinder	0	753	0	0
Ending Head	15	15	0	0
Ending Sector	17	17	0	0
Ending Cylinder	752	934	0	0
Relative Sector	17	204816	0	0
Number of Sectors	204799	49504	0	0

1Help 2Index 3Exit 4Hex 5Text 6Dir 7FAT 8Partn 9Boot 10Menu

One of these is for the primary DOS partition (usually drive C). If the drive was set up with only one partition, the other three entries will be zeroed out. If the physical disk contains more than one logical drive (for example D), then an Extended DOS partition entry will also be present.

Mirror

Used at least once a day, Mirror helps to ensure almost perfect recovery from an accidentally formatted hard disk. It also improves the ability of DiskFix to repair serious damage to the data on your disk and of Undelete to recover otherwise unprotected data. It does this by saving a copy of your hard disk system area, which lists the names and locations of all files on the disk.

NOTE *The Build Emergency Disk program copies the information Mirror records in the PARTNSAV.FIL file to the emergency disk. DiskFix, when necessary, uses this file for rebuilding the system area of your hard disk. You do not need to run Mirror to take advantage of this; the Build Emergency Disk program does it for you.*

Here's what you'll find in this chapter:

- **Before You Use Mirror** explains some operating system incompatibilities.
- **Running Mirror from AUTOEXEC.BAT** explains how to run Mirror in your AUTOEXEC.BAT file.
- **Running Mirror from DOS** explains how to run Mirror from the DOS command line.
- **Running Mirror from a Batch File** explains how to write a batch file that runs Mirror after you run your most important programs.
- **How Mirror Protects Your Data** explains how Mirror works.
- **Command-Line Options** explains the command-line options you can use to control how Mirror works.

Before You Use Mirror

Some versions of the FORMAT command erase all the data on the hard disk, so there is nothing left to recover. Mirror works with versions of DOS FORMAT that do not erase data on a hard disk. Destructive versions of DOS include the following:

- COMPAQ's MS-DOS through Version 3.2
- AT&T's MS-DOS up to Version 3.1
- Some versions of the MS-DOS supplied by Burroughs

If you have any of these versions of DOS, use PC Format instead from now on (see the *PC Format* chapter).

Mirror saves its special file in the last cluster of the disk. If this cluster is bad, Mirror works more slowly. If Mirror appears to be running slowly, use the Surface Scan option of DiskFix.

Running Mirror from AUTOEXEC.BAT

The best way to ensure that your data is protected by Mirror is to include it in your AUTOEXEC.BAT file.

1. Use the Startup Programs option of PC Config to include Mirror in your AUTOEXEC.BAT file.
2. Reboot your PC, and Mirror will run automatically.

Running Mirror from DOS

▶ From DOS, type

`MIRROR` Enter

or

`MIRROR` *d*`: [`*d*`:...]` Enter

d: is the drive(s) for which you want to run Mirror. If you don't include the drive letter(s), Mirror is run for the current drive. Additional command-line options are at the end of this chapter.

Running Mirror from a Batch File

The more often you use Mirror, the safer your data will be, so you should create batch files that will run Mirror when you leave your most important programs.

This example creates a batch file that runs Mirror when you leave Lotus 1-2-3 (assuming your 1-2-3 files are in a subdirectory called "123"):

1. From DOS, type

   ```
   C: Enter
   CD\123 Enter
   COPY CON: L123.BAT Enter
   LOTUS Enter
   MIRROR C: Enter
   ```

2. Press F6 and then Enter.
3. To run 1-2-3, instead of typing LOTUS or 123, type

   ```
   L123 Enter
   ```

   Mirror will be run every time you exit from Lotus 1-2-3.

How Mirror Protects Your Data

When you format a disk with most versions of DOS, your data is not actually destroyed, but remains hidden on the disk. Only the names and locations of the files are lost.

Mirror keeps a copy of the root directory and the FAT, which is enough information to allow Unformat to restore all file names and their locations on your disk. Unformat can find this information even if your hard disk has been formatted.

If some sort of serious damage has occurred to the data on your hard disk, DiskFix can use the information stored by Mirror to repair your disk. This information is in the PARTNSAV.FIL file on the emergency disk. The Build Emergency Disk program copies the information Mirror records to a floppy disk when creating or updating the emergency disk. Always keep an up-to-date version of your emergency disk available.

Undelete, DiskFix, and Unformat still work if Mirror hasn't been run, but they are more effective if the Mirror information is current. This is why Central Point Software suggests that you run Mirror from the AUTOEXEC.BAT file for each logical drive on every hard disk.

Why There are Two Copies of the Mirror File

Mirror maintains two files, one with the most recent copy of your system area, and a prior (backup) copy. This allows you to recover data even in the rare case that Mirror is run after a FORMAT or some other disk disaster that destroys some of the root directory, the FAT, or both. If this happens, your computer might still be able to boot, but the Mirror file will then be filled with the bad information. With two copies of the Mirror file, you can request that Unformat use the older one when necessary.

Command-Line Options

Use the following command syntax in a batch file or at the DOS prompt:

```
MIRROR    [d:] [/1] [/?]
```

or

```
MIRROR    [/PARTN] [/NOCMOS]
```

The *d:* option must be the first option and must be preceded by a space. The space is optional for all other options.

Option	Description
d:	The hard disk drive to protect. Repeat this option to protect multiple drives.
/1	Tells Mirror to keep only the latest Mirror file (normally, Mirror keeps two copies).
/?	Displays help for Mirror command-line options.
/PARTN	Saves a copy of the partition table, boot record, and CMOS information on a floppy disk.
/NOCMOS	Used with /PARTN, prevents saving the CMOS information.

Examples

```
MIRROR C:
```

This command saves the root directory, FAT, and boot record for drive C only.

```
MIRROR C: D: /1
```

This command saves the the root directory, FAT, and boot record for drives C and D and does not keep a backup Mirror file.

Data Monitor

Data Monitor is a memory-resident program that includes several options to guard against data loss, protect confidential data, and enhance the functionality of your computer.

Here's what you'll find in this chapter:

- **Loading and Configuring Data Monitor** explains the recommended method of using Data Monitor and its compatibility with Windows and network configurations.
- **Starting Data Monitor** explains how to start the program for configuring options.
- **Delete Protection** explains the two methods of protection that improve your chances of recovering accidentally deleted files.
- **Screen Blanker** explains how to prevent screen burn-in and unauthorized access to confidential on-screen data, as well as watch colorful images when your computer is idle.
- **Directory Lock** explains how Directory Lock dynamically encrypts and decrypts a directory so that it can be accessed only with a password.
- **Write Protection** explains how to protect crucial data, program, and system files from being deleted, overwritten, or damaged.
- **Disk Light** describes the onscreen indicator when a floppy, hard, or network drive is being accessed.
- **Command-Line Options** describes the command-line options you can use to control how Data Monitor works.

WARNING Data Monitor should not be used with versions of Central Point programs such as Backup or Compress lower than Version 7; they are not compatible and may cause data loss. Use Version 7 or 8 programs instead.

Loading and Configuring Data Monitor

This section explains the recommended method of using Data Monitor, how to turn options on and off temporarily, Data Monitor's use of upper memory and its compatibility with Windows and network configurations.

Loading Data Monitor from AUTOEXEC.BAT

To use any of the Data Monitor options regularly,

1. Choose **Startup Programs** from the Configure menu in PC Tools Desktop.

   or

   Choose **Startup Programs** in PC Config.

   Select the options you want loaded at startup:

   - Delete Protection
   - Write Protection
   - Directory Lock
   - Screen Blanker
   - Disk Light

2. Reboot for the changes to take effect.

This adds the appropriate DATAMON feature to your AUTOEXEC.BAT file. Data Monitor then loads automatically each time you start your computer, and the default configuration for the selected Data Monitor options are turned on.

If you want to change the group of Data Monitor features that are turned on when you start your computer, use the Startup Programs command again.

Configuring Data Monitor Options

Once you select the Data Monitor options you want turned on (Screen Blanker, Directory Lock, Disk Light, Delete Protection, and Write Protection), you can configure them further by selecting the options you want to change from the Configure menu in PC Tools Desktop.

The default settings are in effect until you specify what you want. If you are using Directory Lock and Write Protection, however, you need to configure the directory you want locked and the portions of your disk you want write-protected.

Data Monitor configuration choices are saved in a file called DATAMON.INI. If you turn off an option temporarily and then turn it on again, as described next, your original configuration choices will still be in effect.

Turning Data Monitor Options On or Off Temporarily

Once Data Monitor is loaded in memory, you can turn its options off and on temporarily by using DATAMON command-line options from the DOS prompt (listed at the end of this chapter).

For example, if Write Protection is on and you want to edit a protected file, turn it off temporarily by typing `DATAMON /WRITE-` at the DOS prompt. Or, if you've turned off Disk Light, you can turn it on again by typing `DATAMON /LIGHT+` at the DOS prompt.

If Data Monitor is already resident in memory, you can only turn on an option from the command line if one of the following is true:

- Data Monitor is originally loaded with that option turned on, and it has been temporarily turned off.

  or

- Data Monitor is the last program loaded into memory.

Loading Data Monitor Into High Memory

If you have QEMM, 386MAX, or MS-DOS Version 5's EMM386, and if memory is available between 640K and 1MB, Data Monitor loads itself high automatically to conserve conventional memory (memory below 640K).

Windows and Network Compatibility

The following table shows the options you can use with a network and those you can use with Windows Version 3.x.

Windows Compatible	Network Compatible
Delete Protection (both methods)	Delete Protection (Delete Sentry method only)
Directory Lock	Directory Lock
Write Protection	Disk Light
	Screen Blanker
	Write Protection

If Screen Blanker or Disk Light is turned on, it is automatically turned off while you are using Windows and turned on again when you exit.

NOTE *To use Write Protect, Disk Light, Delete Sentry, or Directory Lock on a Novell network drive, you must load Data Monitor into memory after the Novell network drivers.*

Starting Data Monitor

Configuring Data Monitor options can be done anytime after you load the startup programs you want.

- From the Configure menu in PC Tools Desktop, choose the option you want to configure:

  Display Option ➤ Screen Blanker

  Display Option ➤ Disk Light

  Data Protection ➤ Delete Protection

  Data Protection ➤ Write Protection

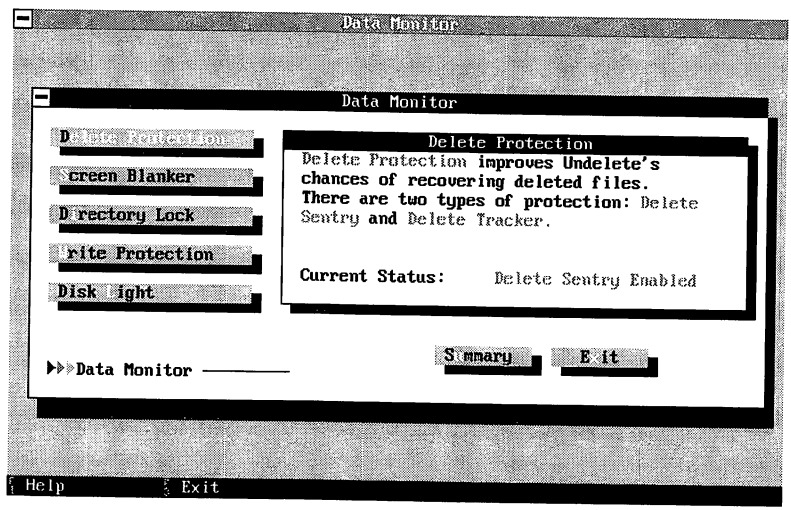
  Data Protection ➤ Directory Locking

  For details on each of the configuration choices, see the appropriate section in this chapter.

  or

1. From DOS, type

   DATAMON Enter



2. Choose the option you want to configure.

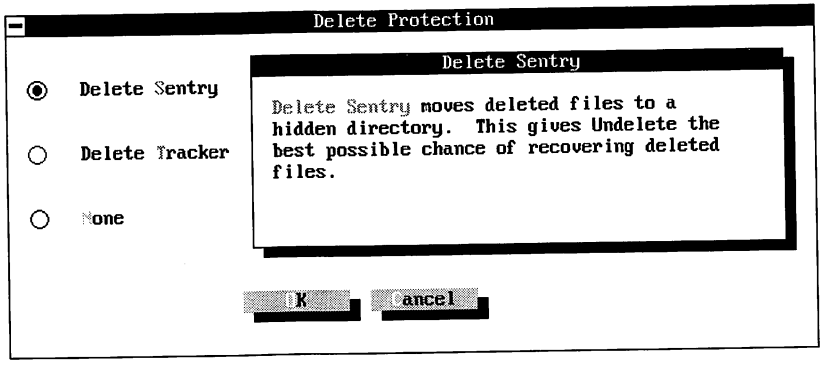
   For details on each of the configuration choices, see the appropriate section in this chapter.

Viewing Data Monitor Options

At any point, you can see a summary of the current configuration options. When you're finished looking at the summary, choose **OK**.

Delete Protection

Delete Protection provides you with two different methods of security against accidentally deleting an important file: Delete Sentry and Delete Tracker. By selecting either method, you greatly improve your chances of being able to use Undelete to recover a deleted file.



Delete Sentry: Turns on the Delete Sentry method, which saves deleted files in a hidden directory named \SENTRY, thus providing complete protection against accidental deletion. You can use this method on network and local drives.

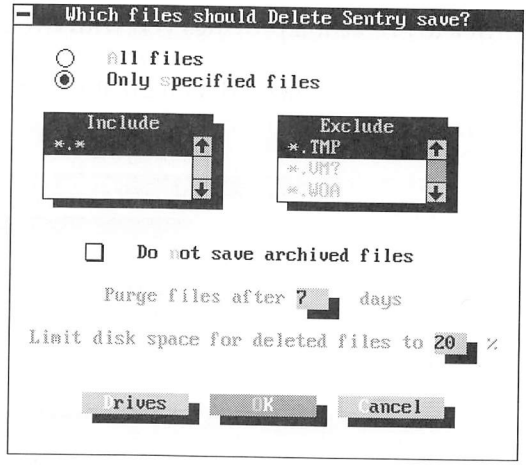
NOTE *Before you can use Delete Sentry on a network volume, the network supervisor should use Data Monitor to configure Delete Sentry for that volume. The hidden \SENTRY directory will be created automatically. The supervisor should then assign users the following rights to the \SENTRY directory:*

NetWare 286	NetWare 386
All rights except Parental	All rights except Access Control and Supervisory

Delete Tracker: Turns on the Delete Tracker method, which saves information that will help Undelete find deleted files. This provides a somewhat lesser degree of protection than Delete Sentry. However, if you use Undelete soon after a file was deleted, you'll still have a good chance of recovering it. This method is not available on network drives.

None: Disables Delete Protection. Undelete can still recover unprotected deleted files, but the chances of complete recovery are lessened.

Configuring Delete Sentry



Which files should Sentry save?: Lets you choose to protect all files (**All files**), or to include or exclude certain files (**Only specified files**).

Include/Exclude list boxes: Let you use DOS wildcard characters (* and ?) to specify files to include and exclude.

For example, to protect all files other than backup files, you would enter `*.*` for **Include** and `*.BAK` for **Exclude**.

You can't enter specific path names for the files to include or exclude. Files are included or excluded across all selected drives.

By default, the following temporary files are excluded: *.TMP, *.VM?, *.WOA, *.SWP, *.SPL, *.RMG, *.IMG, *.THM, *.IML, and *.DOV.

Do not save archived files: Protects only files whose archive attribute is set, indicating that they have changed since they were last backed up. (When CP Backup backs up a file, for example, it clears that file's archive attribute. DOS sets the archive attribute the next time the file is changed.) If this option is off, all files are protected.

Purge files after: Lets you enter a number of days, after which deleted files are removed from the hidden directory. (You can purge Delete Sentry files any time with Undelete.)

Limit disk space for deleted files to: Specifies the percentage of disk space to reserve for the hidden directory. When the files in this directory exceed the reserved percentage, files are automatically purged, beginning with the oldest.

Drives: Lets you specify which drives to protect with Delete Sentry.

Configuring Delete Tracker

Use the Drive Select dialog box to select the drives to protect with Delete Tracker.

About Delete Sentry

The \SENTRY hidden directory is not visible using the DOS DIR command, but you will see it if you use PC Tools Desktop or Directory Maintenance.

Delete Sentry manages the \SENTRY directory so that it appears as though it doesn't exist or take up any hard disk space. If you need the disk space used by the \SENTRY directory, Delete Sentry automatically removes files, starting with the oldest, until there's enough space for your needs. It does this "behind the scenes," without interrupting what you're trying to do. For example, if you are installing an application and there isn't enough disk space, Delete Sentry deletes files from the \SENTRY directory to make room.

Because Delete Sentry does such a good job of keeping its files out of your way, it tells the DOS DIR command not to report the space they take up. For this reason, if you turn off Delete Sentry, you'll notice a decrease in the number of free bytes reported by DIR. (The value for bytes available reported by the CHKDSK command does take into account the space occupied by the Delete Sentry files.)

NOTE *Always use Undelete to purge files from the hidden \SENTRY directory. If you delete files from this directory manually or by using a program such as PC Tools Desktop or FileFind (especially if you delete the master file CONTROL.FIL), Undelete may not be able to recover some or all of the protected files. See "Purging Delete Sentry Files" in the* Undelete *chapter in this part.*

About Delete Tracker

This method saves the name of each deleted file and a list of the cluster numbers it occupied in a hidden file called PCTRACKR.DEL in the root directory of the protected drive. This file is not visible using the DOS DIR command, but you will see it if you use PC Tools Desktop, FileFind, or Directory Maintenance.

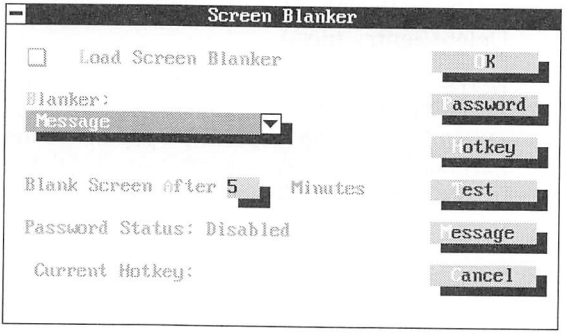
Screen Blanker

If the same image is displayed on your monitor for long enough, it will eventually be permanently "burned into" the display. Screen Blanker protects against this by clearing the screen whenever your computer is idle for a specified period of time.

Screen Blanker's password option also provides security for your data. If you walk away from your computer, you can require that a password be entered before anyone uses the computer again.

If you configured Screen Blanker during installation, the default screen blanker becomes active after there is no activity at your computer, keyboard, or mouse for five minutes. You can change these settings and select another screen blanker image at any time. You can also add additional screen blankers. As Central Point Software creates new screen blanker files, you can download them from the Central Point Software Forum on CompuServe or the Central Point Software BBS.

Turn off the Screen Blanker before running any program you do not want interrupted. PC Tools programs that cannot be interrupted disable Screen Blanker automatically.



Load Screen Blanker: Turns on Screen Blanker when you exit from Data Monitor.

Blanker: Lets you select the image you want to display when Screen Blanker is active. Images that are not supported by your video card are dimmed.

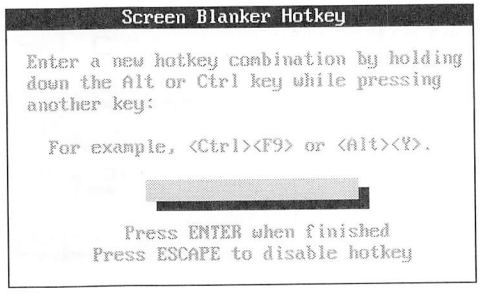
Blank Screen After _ Minutes: Controls the number of minutes that the computer must be idle before Screen Blanker automatically takes over.

Password Status: Shows whether Screen Blanker is password-protected.

Current Hotkey: Shows the currently active hotkey.

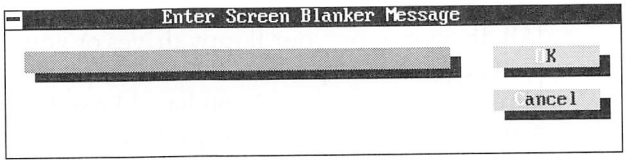
Password: Lets you enter the password that must be typed in before the screen display is restored. The password is optional.

Hotkey: Lets you select the key combination to use to blank the screen immediately. The current hotkey appears in the dialog box. The hotkey is optional.


Screen Blanker Hotkey
Enter a new hotkey combination by holding down the Alt or Ctrl key while pressing another key:
For example, <Ctrl><F9> or <Alt><Y>.
Press ENTER when finished
Press ESCAPE to disable hotkey

Test: Lets you preview the image you have selected. The test continues until you press a key or move the mouse.

Message: Lets you edit the Message screen blanker. If the image you selected has no message to edit, the Message button is dimmed.

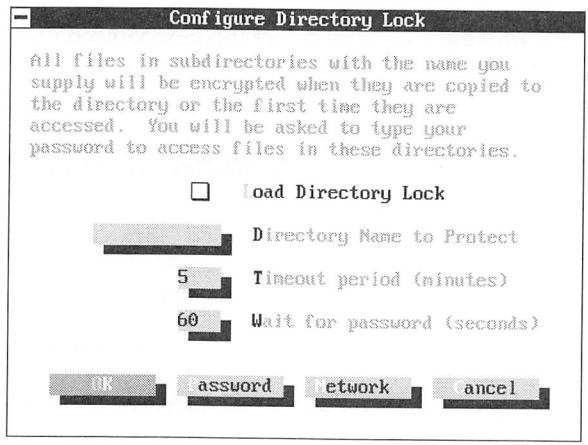


Directory Lock

Directory Lock encrypts files in the protected directories so that no one can read them unless they know the password you assign. Files are encrypted the first time they are opened, and are encrypted and decrypted dynamically as they are read thereafter.

NOTE *Before Directory Lock can take effect, you must use Data Monitor to specify the directories to protect. If you don't configure Directory Lock with Data Monitor, no directories will be protected.*

If full DES (Data Encryption Standard) security is needed, you should use PC Secure instead. See the PC Secure *chapter in this part for details.*


Configure Directory Lock
All files in subdirectories with the name you supply will be encrypted when they are copied to the directory or the first time they are accessed. You will be asked to type your password to access files in these directories.
oad Directory Lock
Directory Name to Protect
5
Timeout period (minutes)
60
Wait for password (seconds)
OK
assword
etwork
ancel

Load Directory Lock: Turns on Directory Lock when you exit from Data Monitor.

Directory Name to Protect: The name of the directory (or directories) you want password-protected. Do not include a backslash (\) in the name of the directory.

All directories on your floppy drives or your local hard drive with this name will be password-protected. For example, if you have entered `MAIL` as the directory to protect, and you have three directories, A:\MAIL, C:\MAIL, and C:\JUNK\MAIL, all will be protected.

Timeout period: Controls the number of minutes that the computer can be idle before the password is requested again. This maintains security while making it easy for you to work with a protected directory. If you don't enter a number here, the password only has to be typed once during a session.

(The timeout period option is disabled automatically while you are using Windows.)

Wait for Password: Specifies the number of seconds that Directory Lock waits for the password to be entered.

Password: Specifies the password that must be entered before the files in this directory can be read.

WARNING Don't forget your Directory Lock password. If you do, all data in the protected directory will be irrecoverably encrypted.

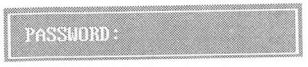
Network: Specifies a path name for network directories to be protected. Don't include a drive letter in the path name, because Directory Lock protects all network drives that you're logged on to.

For example, if you enter `\HOME\SECRET` for the network path, then all directories named \HOME\SECRET on all network drives to which you're logged on will be protected.

To not use Directory Lock to protect network directories, choose **Disable**.

Using Directory Lock

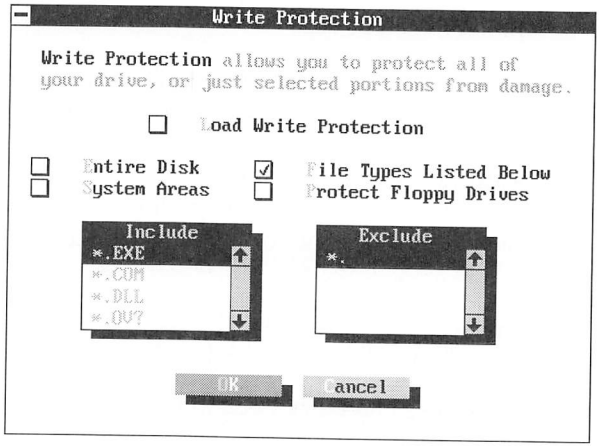
If an attempt is made to read from a protected directory, a dialog box requires you to enter the password before access is permitted.



If you no longer want to protect the files in a directory, copy them to another directory while Directory Lock is turned on. Then turn it off, or change the name of the protected directory. You can then delete the original files and directory. (If you just turn Directory Lock off, you won't be able to decrypt the files in the formerly protected directory.)

Write Protection

Write Protection prevents crucial data from being deleted, overwritten, or damaged on hard or floppy disks.



Load Write Protection: Turns on Write Protection when you leave Data Monitor.

Entire Disk: Protects the entire disk from being written to.

System Areas: Protects those areas of your disk that are normally not accessible, including the boot sector and File Allocation Table (FAT). The option does this by preventing certain types of low-level disk write operations.

NOTE *Certain applications may perform this type of operation for legitimate reasons. For example, Write Protection will alert you if you try to use DiskEdit or the Revitalize a Disk option in DiskFix.*

File Types Listed Below: Protects specified files from being written to.

Include/Exclude list boxes: Let you use DOS wildcard characters (* and ?) to specify files to include and exclude.

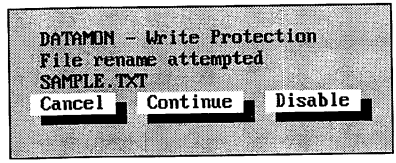
For example, to protect all batch files other than AUTOEXEC.BAT, you would enter `*.BAT` for **Include** and `AUTOEXEC.BAT` for **Exclude**.

By default, the following files are protected: *.COM, *.EXE, *.DL?, and *.OV?.

Protect Floppy Drives: Includes all floppy drives.

Using Write Protection

Once Write Protection is loaded, a dialog box requires confirmation before you can make changes to a write-protected area of your disk.



- Press C to cancel the operation.

  or

  Press O to continue an operation that you initiated.

  or

  Press D to disable Write Protection temporarily. You can turn it back on later from the DOS command line or from within Data Monitor.

Disk Light

Disk Light saves you from having to peer under your desk to see if your computer is accessing one of its drives. It also lets you know when you are accessing network drives and which ones they are.

Whenever the computer is reading from or writing to a drive, the letter of that drive appears in the upper-right corner of your screen, along with "r" or "w" to indicate whether the computer is reading from or writing to the drive. You can see Disk Light from within any text-based program; it is not visible from within graphics-based applications.

TIP *If you're using Disk Light on a network, the program may show that network drives are being accessed at unexpected times. DOS may be searching network drives that are included in the PATH statement in your AUTOEXEC.BAT file.*

Load Disk Light: Turns on Disk Light when you exit from Data Monitor.

Command-Line Options

Use the following command syntax in a batch file or at the DOS prompt:

```
DATAMON  [/option+ or /option-]
         [/ALL+ or /ALL-] [/LOAD] [/LOW] [/STATUS]
         [/UNLOAD] [/?] [/VIDEO]
```

Option	Description
/*option*+	Turns on the specified option. (See the following list.) Repeat this option to turn on multiple options.
/*option*-	Turns off the specified option. Repeat this option to turn off multiple options.
/ALL+	Turns on all options except for Delete Tracker.
/ALL-	Turns off all options.
/LOAD	Loads Data Monitor using the options from DATAMON.INI.
/LOW	Does not load into upper memory even if it's available.
/STATUS	Displays the status of all Data Monitor options.
/UNLOAD	Unloads Data Monitor from memory.
/?	Displays command-line help for Data Monitor options.
/VIDEO	Displays command-line help for Data Monitor program display and mouse options.

For *option*, substitute your choice from the following:

Option	Option Name
DATALOCK	Directory Lock
LIGHT	Disk Light
TRACKER	Delete Protection / Delete Tracker method
SENTRY	Delete Protection / Delete Sentry method
WRITE	Write Protection
SCREEN	Screen Blanker

Delete Sentry and Delete Tracker are mutually exclusive options. Only one of them can be turned on at a time.

Examples

```
DATAMON /LIGHT+
```

This command turns on Disk Light.

```
DATAMON /SENTRY-
```

This command turns off the Delete Sentry method of Delete Protection.

```
DATAMON /UNLOAD
```

This command unloads Data Monitor from memory.

Wipe

Wipe protects the confidentiality of deleted data by erasing it completely from a hard or floppy disk. Once you wipe a file or disk, you can no longer recover or read it by any means.

Here's what you'll find in this chapter:

- **Starting Wipe** explains how to start Wipe from PC Tools Desktop or from the DOS command line.
- **Wiping Directories or Files** explains how to wipe files or entire directories.
- **Wiping a Disk** explains how to wipe data from your hard and floppy disks.
- **Selecting Wipe Options** describes options that control how thoroughly data is wiped from your disk.
- **Command-Line Options** describes options that you can add to the DOS command-line.

When you delete a file using the DOS DEL command, the file name is removed from the directory, but the data remains on the disk until another file uses that disk space. Wipe deletes files, directories, or an entire disk and then writes a user-definable character on the area of the disk where the data used to be.

Starting Wipe

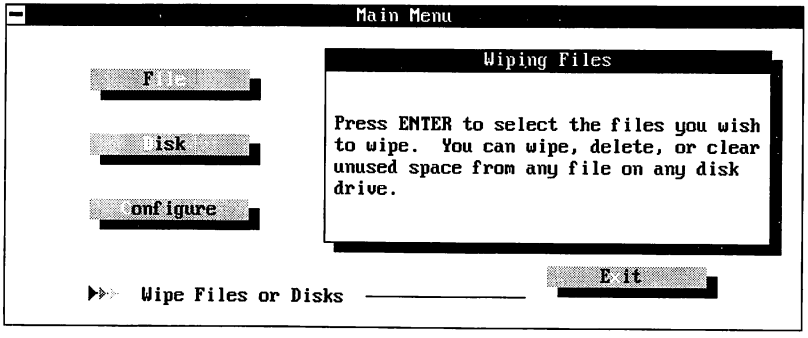
▶ Choose **Change ➤ Wipe** from the File menu in PC Tools Desktop.

or

From DOS, type

`WIPE` Enter

The Wipe main window appears.

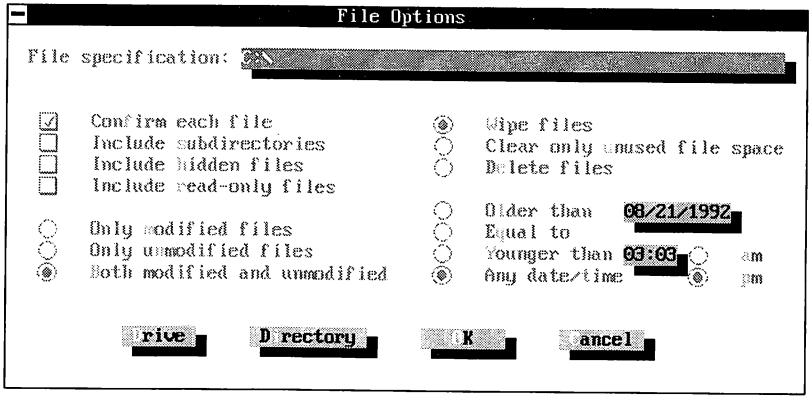

Main Menu
File
Disk
onfigure
Wiping Files
Press ENTER to select the files you wish to wipe. You can wipe, delete, or clear unused space from any file on any disk drive.
E it
Wipe Files or Disks

Wiping Directories or Files

When you first install Wipe, the default wipe option is a Fast Wipe that writes the value 0 (zero) once over the data to be wiped. Before wiping files, you might want to change this option. See "Selecting Wipe Options" later in this chapter.

WARNING Once you wipe a file, there is no way to recover it. Use this option with care.

1. Choose **File** from the Wipe Main Menu.



2. In the File Specification text box, type the name of the file you want to delete.

   To wipe or delete more than one file, use the wildcard characters * and ?. For example, type `C:\WORD\*.BAK` to wipe all backup files in the directory C:\WORD.

   For more about entering file specifications, see the chapter, *Working in the PC Tools Environment* in *Part 1 Getting Started* in this volume.

If you don't specify a drive letter and directory name, the program wipes files in the current drive and directory. To change the current drive or directory, see the next topics in this section.

3. Press Enter to wipe the specified file(s), using the current options in the rest of the dialog box; or change those options.

4. Select any of the following check box options:

   Confirm each file: Shows you the name of each file before it is wiped or deleted and requires you to confirm or skip it.

   Include subdirectories: Wipes files contained in subdirectories of the current or specified directory that match the file specification.

   Include hidden files: Wipes hidden files that match the file specification. Hidden files are invisible to the DOS DIR command.

   Include read-only files: Wipes read-only files that match the file specification. Read-only files usually can't be modified.

5. Select the type of files to wipe.

   Only modified files: Wipes only those files whose archive bit is set, meaning that they have been changed since they were last backed up.

   Only unmodified files: Wipes only those files whose archive bit is not set, meaning that they have not been changed since they were last backed up.

   Both modified and unmodified: Wipes files no matter how their archive bit is set.

6. Select the type of deletion or wipe you want.

   Wipe files: Deletes the files from the disk, then overwrites the areas where they were stored with the character(s) of your choice.

   Clear only unused file space: Wipes only the unused disk space associated with the files you specified. The files themselves are unaffected.

   DOS assigns disk space to files in increments called *clusters* (which are different sizes on different types of disks). For this reason, a file doesn't always use all the space assigned to it. For example, a 1000-byte file stored on a disk with 512-byte clusters would be assigned 1024 bytes. This option would wipe the 24 extra bytes assigned to this file but not actually used by it. This space may contain data from previously deleted files.

   To clear the unused space for an entire disk, use the file specification `\*.*` and make sure that **Include subdirectories** is selected.

   Delete files: Deletes the files just like the DOS DEL command does. Unlike DOS, however, the deletion includes hidden and read-only files.

7. Select the age of the files to wipe.

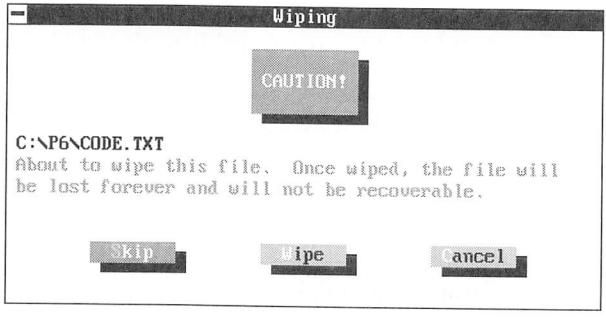
   Older than: Wipes only the specified files whose date and time are the same as or earlier than the date and time entered here.

   Equal to: Wipes only the specified files whose date and time are the same as the date and time entered here.

   Younger than: Wipes only the specified files whose date and time are the same as or later than the date and time entered here.

   Any date/time: Wipes specified files regardless of their date and time.

8. Choose **OK**.



9. If **Confirm each file** is selected,

   ▶ To go on to the next file without wiping this one, choose **Skip**.

   or

   To wipe this file and go on to the next one, choose **Wipe**.

   You then see a dialog box that shows you whether each file in the group was wiped, deleted, or skipped.

Changing the Drive

1. Choose **Drive** from the File Options dialog box.
2. Select the drive that contains the files you want to wipe or delete and choose **OK**.

   The File Specification text box displays your selection.

Changing the Directory

1. Choose **Directory** from the File Options dialog box.
   - To change to a higher directory, select the line with two periods on it.

     or

     To change to a lower subdirectory, select the directory name. Directory names are followed by <DIR>.
2. Choose **OK** when you're in the directory you want.

   The File Specification text box displays your selection.

Wiping a Disk

When Wipe is first installed, the default wipe option is a Fast Wipe that writes the value 0 (zero) once over the data to be wiped. Before wiping files, you might want to change this option. See "Selecting Wipe Options" following for more information.

WARNING Once a disk has been wiped, there is no way to recover it. Use this option with care.

1. Choose **Disk** from the Wipe Main Menu.
2. To change drives, choose **Change Drive**, select the drive you want to wipe, and choose **OK**.
3. Choose the parts of the disk to wipe.

   Wipe disk: Wipes the entire disk.

   Clear only unused disk space: Wipes only space containing previously deleted data (unallocated clusters). Existing files are not affected.

   DOS assigns disk space to files in increments called *clusters* (which are different sizes on different types of disks). For this reason, a file doesn't always use all the space assigned to it. For example, a 1000-byte file stored on a disk with 512-byte clusters would be assigned 1024 bytes. This option would wipe all extra space assigned to files but not actually used by them. This space may contain data from previously deleted files.
4. Choose **OK**.

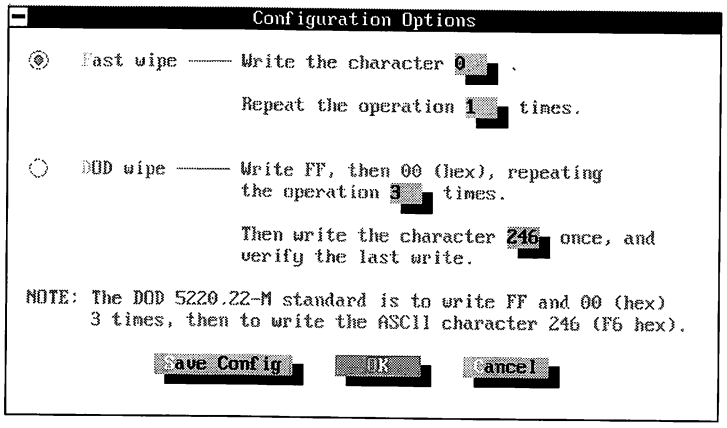
   After you confirm that you want to wipe or clear, you see a graphic representation of the program's progress.
5. To cancel the wiping of the disk, choose **Stop**, then choose **Cancel**.

Selecting Wipe Options

Use this dialog box to control how thoroughly data is wiped from your disk.

Setting the Wipe Options

1. Choose **Configure** from the Wipe Main Menu.


Configuration Options
Fast wipe
Write the character 0 .
Repeat the operation 1 times.
DOD wipe
Write FF, then 00 (hex), repeating the operation 3 times.
Then write the character 246 once, and verify the last write.
NOTE: The DOD 5220.22-M standard is to write FF and 00 (hex) 3 times, then to write the ASCII character 246 (F6 hex).
Save Config
OK
Cancel

2. Select the wipe method that satisfies your security requirements.

   Fast Wipe: Overwrites the area with the character you specify here.

   DOD Wipe: Satisfies the US Department of Defense standards for wiping data from disks. You can decide how many times the area is overwritten with 1s and 0s (three times is the government's minimum requirement). You can also enter the ASCII number for the character that the program writes to the disk and then verifies.

3. If you selected Fast Wipe, and you want it to be performed more than once as an added security measure, enter a number between 1 and 999 for **Repeat the operation.**

4. To use these settings in future sessions, choose **Save Config**.

   or

   To use these settings just for the current session, choose **OK**.

Command-Line Options

You can use Wipe without going through the Wipe Main Menu by using the following command syntax at the DOS prompt:

```
WIPE      d: [/DISK] [/UNUSED] [/GOVT] [/REP:n]
          [/QUIET] [/VALUE:n] [/?] [/VIDEO]
```

or

```
WIPE      [d:] filespec [/DELETE] [/SUB] [/HIDDEN]
          [/READONLY] [/MODIFIED or /UNMODIFIED]
          [/NOCONFIRM] [/UNUSED] [/GOVT] [/QUIET]
          [/REP:n] [/VALUE:n]
```

NOTE *There are additional command-line options that you can use to control program display and mouse operation. See the* Global PC Tools Command-Line Options *chapter in* Part 4 General Reference *in this volume or type* `WIPE /VIDEO`.

Disk Options

Option	Description
d:	The drive to be wiped.
/DISK	Wipes entire disk.

File Options

Option	Description
d:	The drive containing the files to be wiped.
filespec	The file or files to be wiped. Use the wildcards * and ? to specify a group of files.
/DELETE	Deletes files but does not wipe them.
/SUB	Wipes or deletes files in subdirectories also.
/HIDDEN	Wipes or deletes hidden files also.
/READONLY	Wipes or deletes read-only files also.
/MODIFIED	Wipes or deletes only files that have been modified since the last time they were backed up.
/UNMODIFIED	Wipes or deletes only files that have not been modified since the last time they were backed up.
/NOCONFIRM	Wipes or deletes without requiring confirmation for each file.

General Options

Option	Description
/UNUSED	Wipes only unused file or disk space.
/GOVT	Follows the US Department of Defense rules for wiping.
/QUIET	Does not display prompts, just status information.
/REP:*n*	Repeats wiping *n* times. Default: 1.
/VALUE:*n*	Character to be written, where *n* is the character's ASCII number. Default: 0.
/?	Displays command-line help for Wipe options.
/VIDEO	Displays command-line help for Wipe program display and mouse options.

Option Combinations

The following table shows you which options you may use together. A bullet (•) at the intersection of a column and a row indicates that you can use the options together.

	DISK	UNUSED	SUB	GOVT	QUIET	REP	VALUE	HIDDEN	MODIFIED	UNMODIFIED	DELETE	NOCONFIRM	READONLY
DISK		•		•	•	•	•						
UNUSED	•		•	•	•	•	•	•	•	•		•	•
SUB		•		•	•	•	•	•	•	•	•	•	•
GOVT	•	•	•		•	•	•	•	•	•		•	•
QUIET	•	•	•	•		•	•	•	•	•	•	•	•
REP	•	•	•	•	•		•	•	•	•		•	•
VALUE	•	•	•	•	•	•		•	•	•		•	•
HIDDEN		•	•	•	•	•	•		•	•	•	•	•
MODIFIED		•	•	•	•	•	•	•			•	•	•
UNMODIFIED		•	•	•	•	•	•	•			•	•	•
DELETE			•		•			•	•	•		•	•
NOCONFIRM		•	•	•	•	•	•	•	•	•	•		•
READONLY		•	•	•	•	•	•	•	•	•	•	•	

PC Secure

PC Secure keeps your proprietary data and programs secure by encrypting, compressing, and hiding sensitive files on your disk. File encryption "scrambles" a file so that the data in it cannot be read until it is decrypted (unscrambled).

You can safely use a hard disk defragmenting program such as Compress on encrypted files.

The Directory Lock option of Data Monitor provides a convenient way to dynamically encrypt and decrypt files in a directory when full Data Encryption Standard (DES) encryption is not required. See the *Data Monitor* chapter in this part for details.

WARNING Operated improperly, PC Secure changes from a data security program to the electronic equivalent of a paper shredder. Losing your password can cause irretrievable loss of your data. Before you use PC Secure, read this chapter to familiarize yourself with the feature.

Here's what you'll find in this chapter:

- **Before You Use PC Secure** explains the difference between the international version of PC Secure and the US domestic version, identifies types of files that PC Secure encrypts and files that should not be encrypted, and how PC Secure complies with the US Department of Defense standards for data security.
- **Starting PC Secure** explains how to start PC Secure and enter a password.
- **Managing Your Password Keys** explains how you can encrypt and decrypt files with password keys, which are words or numbers that you enter when PC Secure prompts you for them.
- **Encrypting a File** explains how to "scramble" a file electronically to protect its contents.
- **Encrypting a Directory** explains how to protect an entire directory so you don't have to encrypt one file at a time.
- **Decrypting a File** explains how to unscramble a file.
- **Decrypting a Directory** explains how to unscramble a directory.
- **Selecting PC Secure Options** describes other configuration options available in PC Secure.

- **Transferring Encrypted Files** explains how to send encrypted files to other computers.
- **Command-Line Options** describes the PC Secure command-line options.

Before You Use PC Secure

Please note the following sections before using PC Secure.

International Versions of PC Secure

Due to US federal regulations, PC Secure is shipped out of the US with DES encryption replaced with another encryption method. The Full DES Encryption and Quick Encryption options are replaced by a single Encryption option, available from the Options menu and the PC Secure command line. Compression and expansion are the same as in the USA version.

The USA and International versions of PC Secure are not compatible. You will not be able to decrypt a file with the USA version that was encrypted with the International version and vice versa.

What Kinds of Files Can PC Secure Encrypt?

PC Secure can encrypt and decrypt:

- **Data files.** Most data files can also be compressed, except for pre-compressed files made by such programs as ARC, which usually become larger. Compressing files smaller than a few hundred bytes will not save disk space, because DOS reserves 2K for each file regardless of its size; however, these files will benefit from improved security.
- **Files on Networks.** PC Secure is compatible with standard DOS networks such as Novell.
- **Applications.** *DO NOT encrypt PC Secure itself.* PC Secure can place other applications under password control. You can encrypt the applications you want to limit access to—for example, a payroll program—and issue the key only to authorized users. The program file(s) must be decrypted before they can be used.

  If you encrypt PC Tools programs for password control, turn off Compression (they are already compressed). If PC Tools was installed in subdirectories, be sure to decrypt not only the .EXE file for the program you want to use, but also any of that program's related files, which may be in another subdirectory.

Files that You Cannot or Should Not Encrypt

There are two kinds of files you should *never* encrypt. When you encrypt directories (and nested subdirectories, if selected), be sure they do not contain any of these files.

- **Copy-Protected Files.** Some copy-protection schemes work by hiding extra information in out-of-the way areas of the original disk. Unless that extra information is present, the application won't run. You can encrypt and decrypt a copy-protected file, but since PC Secure doesn't read this hidden information, the decrypted file becomes unusable.
- **Essential Program Files.** Never encrypt program files essential to the operation of your computer, including .SYS files, the COMMAND.COM file, and active memory-resident programs. In addition, you should not encrypt PC Secure itself.

Meeting US Government DOD Standards

PC Secure can achieve US government Department of Defense (DOD) standards for file security when you start the program using the /G option.

Full DES Encryption and Expert Mode are set as default options for the session, but can be changed from the Options menu. (In the International version, DES encryption is replaced by a different encryption method.)

The Delete Original File option is also set as the default and cannot be changed. Anytime you encrypt a file during that session, the original file is destroyed according to DOD standards. Each encrypted file is overwritten seven times, then verified to make sure it cannot be recovered. This may take a while to process.

Once encryption is complete, the message "Deleting Original" and the number of passes appear in the Progress window displayed while PC Secure processes files and directories. The Options Setting panel shows DOD as the Deleting Original setting. After the original file is deleted, PC Secure verifies the deletion and tells you it is "Verifying."

Starting PC Secure

NOTE *You can also start PC Secure from PC Tools Desktop and quickly encrypt or decrypt files.*

▶ From DOS, type

```
PCSECURE [Enter]
```

or

If you need file security according to US government Department of Defense (DOD) standards, type

```
PCSECURE /G [Enter]
```

See "Meeting US Government DOD Standards," earlier in this chapter.

or

If you need to encrypt files multiple times (perhaps so that two or more people with different passwords are needed to decrypt them), type

```
PCSECURE /M [Enter]
```

WARNING Use the /M option with caution. If you forget the order of multiple passwords, you will not be able to decrypt the file.

The /G and /M options can be used together in one command.

You can also use PC Secure from PC Tools Desktop by choosing Secure from the File menu. See *Part 2 PC Tools Desktop* for details.

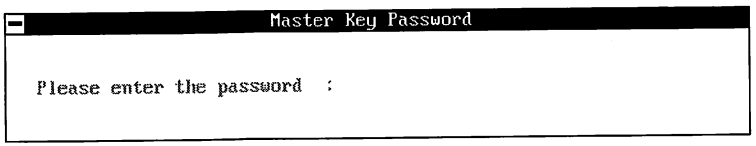
Entering the Master Key Password

When you use PC Secure for the first time, it prompts you for a master key password. This key enables you to decrypt any file you make in the future (with a few exceptions—see the note below). If the specific password for an encrypted file is lost or forgotten, you can use the master key to decrypt the file.

The master key is like a second house key: you need to remember where you put it, but you don't want anyone else to know about it.

WARNING The master key will work on any file encrypted with that key, with the following exceptions: files encrypted with the Expert Mode option selected, or files encrypted from the PC Secure command line (which automatically enforces Expert Mode).

1. You will only be prompted for a master key once. In the Warning dialog box, choose **OK.**
2. Enter the master key password.



For some good master key ideas, including a full description of alphanumeric and hexadecimal keys, see "Managing Your Password Keys," later in this chapter.

- Type an alphanumeric key and press Enter.

  Use 5 to 32 letters, numbers, or punctuation marks. PC Secure displays an asterisk (*) instead of the character, so you must remember the exact spelling, including capitalization.

  or

  Press F9 to be prompted for a hexadecimal key. Type the password and press Enter.

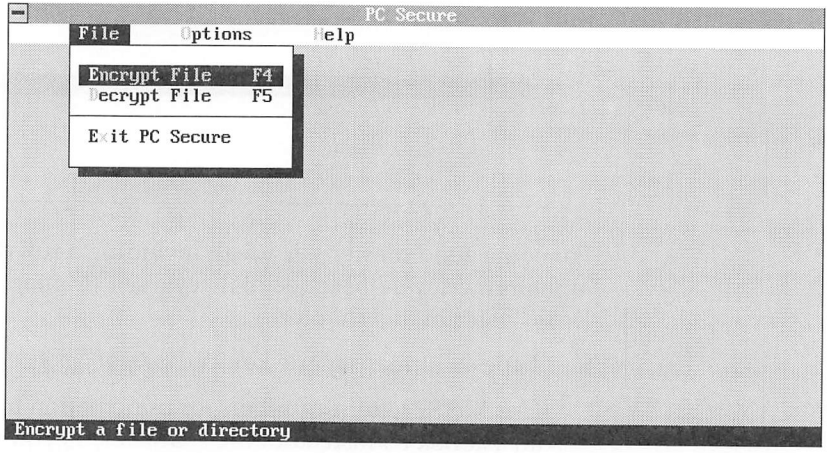
  PC Secure displays the characters so you can be sure you have entered the password correctly. You will not be asked to verify the password (step 3).

3. If you used an alphanumeric key, type your password again to verify it and press Enter.

   A dialog box informs you that your master key is being installed. Then the main PC Secure window appears, from which you can encrypt and decrypt files and set PC Secure options.

4. Record the master key password on a piece of paper for future reference and store it in a safe place.

What You See



From the File menu, you can encrypt and decrypt files and exit from PC Secure. From the Options menu, you can specify how the file should be encrypted, as described in "Selecting PC Secure Options," later in this chapter.

Function Keys

The following function keys are available in PC Secure:

Function Key	Description
F1 Help	Provides online help.
F2 Index	Displays the Help index.
F3 Exit	Exits from PC Secure.
F4 Encrypt	Encrypts a file or directory.
F5 Decrypt	Decrypts a file or directory.
F10 Menu	Activates the horizontal menu bar.

Managing Your Password Keys

Passwords, also known as *keys*, are required to encrypt and decrypt files and directories. Here are some tips on using them:

- Choose keys that can't be guessed easily.
- Guard your keys from being revealed to other people.
- Never lose or forget your keys.
- Never use the master key to encrypt a file; this would defeat its purpose.

PC Secure allows you to choose either an alphanumeric or hexadecimal key.

Alphanumeric Key: May be any string of letters, digits, or punctuation marks. It must be 5- to 32-characters long. Alphanumeric keys in PC Secure are case-sensitive. This means that "flower," "Flower," and "FLOWER" are treated as three different keys. PC Secure displays asterisks for alphanumeric keys, so you must remember the exact spelling.

Hexadecimal Key: May be any combination of the digits "0" through "9" or the letters "A" through "F" (or "a" to "f"—PC Secure is *not* case-sensitive for hexadecimal keys.) Hexadecimal keys are always 16-characters long. Since it is easy to make mistakes typing a long string of characters, PC Secure displays the characters as you enter them.

If you start PC Secure with the /M option, you can encrypt the same file multiple times. For example, this lets you encrypt a file with two different passwords, known to two different people, so that both would be required to decrypt the file. In this case, you would have to remember not only the passwords but their order.

Here are some ways to choose a key that will be hard to guess:

- For alphanumeric keys, close your eyes, open a dictionary, point at the page, and open your eyes. The closest word becomes the first word of your key. Repeat the process, and find a second word. These two words are your new key.
- For hexadecimal keys, use a mechanical method like rolling dice or flipping a coin to generate the number, since it is difficult for people to think up a genuine random number. This is the hardest key to break, but be sure to write it down. Or open a table of random numbers using the dictionary method above, then convert the decimal to a 16-digit hexadecimal number.

Encrypting a File

When you encrypt a file, you protect it by electronically "scrambling" its contents.

You can encrypt a single file or all the files in a selected directory. Both procedures follow.

If you need to encrypt a group of files, you can do so from within PC Tools Desktop by using the Secure command from the File menu (see *Part 2 PC Tools Desktop*), or by using PC Secure from the DOS command line (discussed at the end of this chapter).

The first time you use PC Secure, the following encryption options are selected:

- Quick Encryption (two rounds of DES randomization) for the USA version, or Encryption for the International version
- Compress files while they are being encrypted
- One password key for all the files in a given session
- Delete the original file as soon as it is encrypted

Whenever you start PC Secure with the /G option, the following encryption options are selected:

- Full DES Encryption (16 rounds of DES randomization) for the USA version, or Encryption for the International version
- Compress files while they are being encrypted
- One password key for all the files in a given session
- Delete the original file as soon as it is encrypted, according to DOD standards (enforced)
- Expert mode (disables the master password)

Before you encrypt a file, you might want to change the encryption options. You can save a changed configuration for future sessions. See "Selecting PC Secure Options," later in this chapter.

Encrypting a File

1. Choose **Encrypt File** from the File menu, or press F4.
2. Select the file you want to encrypt in the File Selection dialog box.
   For help selecting files, press F1 or see *Part 1 Getting Started.*
3. Choose **Encrypt**.

4. Type a password for this file.

   ▶ Type an alphanumeric key and press Enter.

   or

   Press F9 to be prompted for a hexadecimal key. Type the password and press Enter.

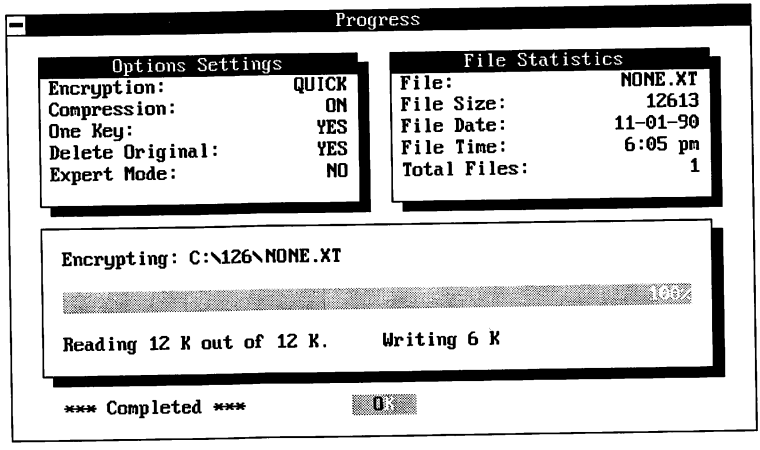
NOTE *Never use the master key to encrypt a file; that would defeat its purpose.*

The password you enter now is specific to this file and will be used to decrypt the file later. For a discussion of password keys, see "Managing Your Password Keys," earlier in this chapter.

NOTE *If the One Key option is selected, which is the default, you will be prompted for a password only once in this session, for the first file you encrypt. Thereafter, PC Secure will begin encrypting each additional file as soon as you choose Encrypt, using the same password.*

5. If you used an alphanumeric key, type the same password again to verify it and press Enter.

   PC Secure starts to encrypt your file. The Progress window tells you what file is being encrypted, what action is being performed, shows you the progress of the encryption, and lets you know when it is finished. The Options Settings panel lists the settings currently in effect. The File Statistics panel lists the file's name, size, date and time last modified, and the total number of files processed.



   ▶ If you started PC Secure with the /G option to use the US government DOD standard, PC Secure deletes the original file once it has been encrypted and overwrites it seven times. This process takes a little time, and the Progress window keeps you informed.

- If you turned off the Delete Original Files option, you will get the message "That file already exists. Replace?" when the file you are encrypting has the same name as another already-encrypted file in that directory, but a different extension.

  Choose **Cancel**, then either rename or move one of the files and begin the encryption again.

WARNING *Do not* choose **OK** or the file already encrypted will be lost.

For more information, see "Deleting the Original File," later in this chapter.

6. When the encryption is finished, choose **OK**.
7. Repeat steps 2–6 to encrypt another file, if necessary.

Encrypting a Directory

You can encrypt an entire directory at once, instead of encrypting individual files. The process is similar to encrypting a file, except that you use the Directory button to encrypt the selected directory, and a dialog box lets you encrypt nested subdirectories.

WARNING Be aware of the contents of directories you want to encrypt. Do not encrypt directories containing .SYS files, COMMAND.COM, active memory-resident programs, copy-protected programs, or PC Secure itself.

To select a directory, type its name or select a directory name from the list in the File Selection dialog box. Choose **Directory** to encrypt it. If you want to encrypt all nested subdirectories within the selected directory, select **Include all subdirectories** in the Directory Processing dialog box. (Be sure all the files in nested subdirectories are appropriate to encrypt.)

Decrypting a File

To "unscramble" a previously encrypted file or directory, you decrypt it. Decrypting restores the file or directory to its original condition.

1. Choose **Decrypt File** from the File menu or press F5.
2. Select the file you want to decrypt by typing a file name or selecting a name from the list in the File Selection box.
3. Choose **Decrypt**.
4. Type the same password you used to encrypt the file and press Enter.

NOTE *If the One Key option is selected, which is the default, PC Secure will not ask you for the password on subsequent decryptions for the duration of the session, unless a file's key differs from the first key entered.*

If you started PC Secure with the /M option and used multiple passwords to encrypt the file, you should enter those passwords in reverse order to decrypt the file.

PC Secure checks your password key to see if it fits. If there is any problem, a dialog box tells you what it is and lets you try again.

If	Then
The password is invalid or you mistyped it the second time	Choose **OK** and try again.
The file is not a PC Secure file	Choose **OK** and select another one. (This message means the file you selected is not encrypted.)
You turned off the Delete Original Files option	Both the original and an encrypted copy may still be in the same directory, in which case you will get a "That file already exists. Replace?" message.
The original file has not been changed since it was encrypted	Choose **OK** to overwrite it.
The original file has been changed	Choose **Cancel**, then either rename or move the original file, and decrypt the file again.

WARNING Do not choose **OK** or the decrypted copy will be written over the original file and all changes will be lost.

For more information, see "Deleting the Original File," later in this chapter.

While PC Secure decrypts the file, it shows you its progress.

5. When the decryption is finished, choose **OK**.
6. Repeat steps 2–5 to decrypt another file, if necessary.

Decrypting a Directory

You can decrypt an entire directory at once, if it was encrypted as a directory. The process is similar to decrypting a file, except that you use the Directory button to decrypt the selected directory and you have the option to decrypt nested subdirectories.

To select a directory, type its name or select a directory name from the list in the File Selection dialog box. Choose **Directory** to decrypt it. If you encrypted nested subdirectories, be sure you select **Include all subdirectories** in the Directory Processing dialog box.

Selecting PC Secure Options

Before you encrypt a file, you might want to change the encryption option settings.

1. Select the kind of encryption from the Options menu:

   Full DES Encryption: Uses the complete Data Encryption Standard (DES) algorithm. See "Full Versus Quick Encryption," following this procedure.

   Quick Encryption: Runs two to eight times faster than Full DES Encryption, but is theoretically less secure. Uses the same DES algorithm.

   Compression: Compresses files. For more information, see "When to Use Data Compression" and "When Not to Compress," later in this chapter.

   You can compress files without encrypting them by selecting compression, but no encryption options.

   You can apply PC Secure's password control alone, without encrypting or compressing files, by unselecting all three of these options. If all three options are unselected, a dialog box warns you of that fact when you try to encrypt the file. Choose **OK** to process the files for password control only, or press Esc to cancel.

NOTE *In the International version of PC Secure, the two DES encryptions options are replaced by a single Encryption option that uses a different encryption method.*

2. Select file-handling options from the Options menu.

   One Key: Allows you to use one password for many files. PC Secure will only prompt for a password the first time you encrypt or decrypt a file in a session. It continues to use the same key for the duration of the session (unless a file you are decrypting has a different key than the first key, in which case it will prompt for that key).

Hidden: Makes an encrypted file invisible to the DOS DIR command. If you forget the name of the encrypted file, you can locate it with FileFind or PC Tools Desktop.

Read Only: Prevents an encrypted file from being deleted accidentally.

Delete Original File: Makes a copy of the original file, encrypts the copy, and then destroys the original. *You cannot undelete the destroyed original file.*

For maximum security, leave the Delete Original File option selected when encrypting files. If you started PC Secure using the /G option, you cannot turn it off.

See "Deleting the Original File," later in this chapter, for important information about this option, especially the implications of turning it off.

Expert Mode: Disables the master key. With Expert Mode *not* selected the master key can be used to decrypt files. If security is your primary concern, select Expert Mode before you encrypt sensitive material so that the encrypted file can only be decrypted with its file key.

WARNING If you encrypt with Expert Mode on and lose the file key, there is no known way to decrypt the file. Your master key will *not* work. Expert Mode is intended for your most sensitive data.

3. Choose **Save Configuration** from the Options menu to save the settings you have selected for future sessions.

Full Versus Quick DES Encryption

PC Secure's Data Encryption Standard (DES) is a block cipher that works by a combination of transpositions and substitutions. Quick Encryption runs two to eight times faster than Full DES Encryption but is theoretically less secure.

DES starts by dividing the incoming data into blocks of 64 bits. Next, during the "key expansion" phase, the lower 56 bits in the key are permuted into sixteen 32-bit keys for internal use. After that, the bits are reordered or transposed. The 64-bit block is split into two 32-bit blocks. Then, for a total of 16 steps, or rounds—or two rounds if the Quick Encryption option is selected—a 32-bit block is combined with the expanded key and used to index a substitution table. The 32-bit blocks are swapped, and the result from each round is fed to the next. Finally, the bits are transposed once more.

When to Use Data Compression

PC Secure can compress your files as it encrypts them, with no perceptible loss of speed. This means your files take up less room on the disk and are faster to transmit using a modem.

PC Secure uses block-adaptive Lempel-Ziv-Welch (LZW) compression. This technique, unlike Huffman coding (another widely used compression algorithm), can be done in one pass and does not require storing a translation table with the file.

Most of the time, you will want to have the Compression option selected, which is the default—especially if you are encrypting a file or directory for the first time. PC Secure can reduce the size of most files by 25% to 60%.

When Not to Compress

In a few situations, you would do better to have the Compression option off:

- The second or third time you encrypt the same PC Secure file. This is only an issue when you enable multiple encryptions by starting PC Secure with the /M option.
- If you are encrypting files that have already been compressed with some other compression program. In fact, these files may grow larger.

  For example, turn off the Compression option for files that have been compressed by an archiving utility such as ARC. Most PC Tools programs are distributed in compressed form, so turn off Compression if you encrypt any of them for password control.
- If you are preparing a file for archival backup or for transmission over a very noisy phone line, and want to make absolutely sure the file can be recovered correctly.

  Since the translation table is rebuilt on the fly when decompressing, any errors in the file will spread. If phone noise causes the first "the" in a file to be read as "thb," all subsequent occurrences of this string will be decoded as "thb." Under normal operating conditions, however, this type of error is rare.

Deleting the Original File

With the Delete Original File option selected, which is the default, PC Secure makes a copy of the original file, encrypts the copy, and then destroys the original, which cannot be recovered. The original is not destroyed until the copy is safely encrypted, so there must be enough room on the disk for both the original and the copy and a small amount of "overhead," depending on the drive type.

For maximum security, leave the Delete Original File option on when encrypting files.

When this option is NOT selected, PC Secure makes a copy of the original file, encrypts that, and appends the extension .SEC to it. Your original file is intact, and you have an encrypted copy of it with the extension .SEC. You must have enough space on your disk for both files.

"This File Already Exists" when Encrypting

This message occurs when Delete Original File is not selected and you attempt to encrypt two files from the same directory that have the same file names but different extensions. For example, if you are encrypting MYFILE.HLP and MYFILE.EXE, this message appears when you try to encrypt the second file.

Choose **Cancel**. Then either rename or move one of the files and begin the encryption again. DO NOT choose **OK**, or the first *filename*.SEC file will be lost.

"This File Already Exists" when Decrypting

If Delete Original File is not selected when you encrypt a file, you can end up with duplicate files when you decrypt it. Since the original file is not deleted when you encrypt it, it remains intact in the same directory as the encrypted file. The encrypted file is distinguished by the extension .SEC. When you decrypt the file, it tries to revert to its original file name and extension, which results in the duplicate file name.

If the original file has not changed since the copy was encrypted, choose **OK**. The decrypted copy will be written over the original file.

If the original file has changed since the copy was encrypted, choose **Cancel**. Then, either rename or move the original file and decrypt the file again. DO NOT choose **OK**, or the decrypted copy will be written over the original file and all changes will be lost.

Transferring Encrypted Files

When transferring encrypted data, both parties must agree on a key for encrypting and decrypting. The computers on both ends must have the following:

- PC Secure (compatible versions—both USA or both International).
- Communication packages that support XModem or another error-detecting, binary-file protocol, such as the Desktop Accessories Telecommunications application.

NOTE *Transferring encrypted files requires some pre-arranged method for agreeing on a key. Keys, obviously, should never be transmitted in clear over the phone. The best method is to pick a key that will be used for all transmissions and to deliver that key to the other location by a trusted courier, a scrambled phone line, or some other secure channel.*

Transferring Files to Another PC Using a Modem

1. Transfer the key to the receiving site.
2. Start PC Secure at the transmitting site.
3. At the transmitting site, encrypt the file with PC Secure using the prearranged key.

   PC Secure automatically adds a header encoding all of the PC Secure settings.
4. Start the communication program at both sites.
5. Transfer the file, using the transmitting site's communication program.

NOTE *Encrypted files are binary files; do not use an ASCII-transmission method. Always use an error-checking protocol.*

6. After the file has been transmitted, exit from the communication programs.
7. Decrypt the file with PC Secure at the receiving site, using the prearranged key.

   PC Secure uses the encoded header to re-create all of the original settings.

Command-Line Options

Use the following command syntax in a batch file or at the DOS prompt:

```
PCSECURE [/D or /F or /Q or /E]  [/P or /Kxxxxx]
         [/C] [/G] [/M] [/S] [/? or /H] [/VIDEO]
         filespec [filespec ...]
```

NOTE *If you encrypt files from the command line, the file is encrypted without a master key. The only way to decrypt it is to use the password typed at the time of encryption.*

You may use as many options as you want in the command line, including multiple file specifications. The file specification must be the last option.

You can use / or – to begin each option (or string of options). For example, PC Secure interprets each of these as the same command:

```
PCSECURE /F /P /S *.TXT
PCSECURE /FPS *.TXT
PCSECURE -F -P -S *.TXT
PCSECURE -FPS *.TXT
PCSECURE -FP /S *.TXT
```

When you run PC Secure from the command line, the options control the way files are processed, and overwrite conflicting option settings that have been saved as PC Secure's configuration.

Command-line PC Secure always uses Expert Mode and Delete Original File, and picks up the configured settings for Hidden and Read Only options (which default to off and can only be changed from the Options menu). For the USA version of PC Secure, including the /G option in the command line to encrypt to DOD standards will enforce Full DES Encryption even if you have Quick Encryption configured or if you include /Q in the command line.

Option	Description
/D	Decrypts the specified files.
/F	Performs Full DES Encryption (16 rounds) on the specified files. Available in USA version only.
/Q	Performs Quick Encryption (two rounds) on the specified files. Available in USA version only.
/E	Encrypts the specified files, using another encryption method. Available in International version only.
/P	Prompts for a password key. If you press Esc, the current password is canceled and you may type another. You may use Esc multiple times. If you make a typing mistake, use Esc to start over. Pressing Enter accepts the keystrokes to that point.
/K*xxxxx*	Specifies *xxxxx* as your password key. You are not prompted to enter the key. You must immediately type a password after typing /K. If you press Spacebar or Enter immediately after typing K, the key is not valid. If any option other than *filespec* follows /K*xxxxx*, it must be preceded by a space and begin with /or – to identify it as an option, or PC Secure will interpret it as a file specification.
/C	Turns off compression when encrypting. Default: on.
/G	Sets file security to US Government Department of Defense (DOD) standards. See "Meeting US Government DOD Standards" earlier in this chapter.
/M	Allows the specified file to be encrypted multiple times. Default: off. You must decrypt the file the same number of times, entering the passwords in reverse order. For example, this option allows you to encrypt the same file with two different passwords, known to two different people, so that both would be required to decrypt the file. *Use this option with caution. If you forget the order of the passwords, you will not be able to decrypt the file.*
/S	Turns on silent mode, so that no messages appear on your screen during encryption or decryption except to report errors. This is useful in batch files.
filespec	Specifies the file or files you want to encrypt or decrypt. Use the wildcards * and ? to specify a group of files. You can specify another drive or directory if you have write permission to it.
/? or /H	Displays command-line help for PC Secure options.
/VIDEO	Displays command-line help for PC Secure's program display and mouse options.

Examples

```
PCSECURE /Q /K12345 *.DOC
```

This command encrypts all .DOC files in the current directory, using quick encryption, compression, and the key "12345."

```
PCSECURE /F /P *.*
```

This command encrypts all files in the current directory, using full encryption with compression. PC Secure prompts you for the key.

```
PCSECURE /Q /C /K12345 *.TXT
```

This command encrypts all .TXT files in the current directory, using quick encryption, no compression, and the key "12345."

```
PCSECURE /D /K12345 XYZ.DOC
```

This command decrypts the file XYZ.DOC using the key "12345."

PC Format

PC Format is Central Point's replacement for the DOS FORMAT.COM program. It ensures that hard and floppy disks of all densities can be recovered by Unformat in case you accidentally use the FORMAT command.

Most versions of DOS FORMAT.COM do not actually erase data on hard disks. They simply change system information kept in the DOS directory and File Allocation Table (FAT) so that the data will not be accessible through DOS. As long as the data is still on the hard disk, Unformat can recover your disk by restoring the changed system information.

However, some computers come with a version of DOS FORMAT.COM that actually erases the data. In addition, all versions of FORMAT.COM erase the data from floppy disks. Unformat cannot recover a disk if the data is erased.

WARNING Unformat will only be able to recover floppy disks if they were formatted with PC Format.

Here's what you'll find in this chapter:

- **Before You Use PC Format** describes the type of media PC Format supports.
- **Starting PC Format** explains how to start PC Format from the DOS command line.
- **Formatting a Disk** explains the options you can select to format a hard or floppy disk.
- **Command-Line Options** describes the command-line options you can add to PC Format.

Before You Use PC Format

PC Format supports hard disks, floppy disks, RAM disks, and Bernoulli boxes. PC Format will *not* work on a network drive.

Starting PC Format

Install optionally creates a batch file, so that if you type FORMAT out of habit instead of PCFORMAT, PC Format will be run instead of DOS FORMAT. Install also renames all the copies of FORMAT.COM it can find to FORMAT!.COM.

It's still a good idea to check for old copies of FORMAT.COM on all drives. Use FileFind to locate all occurrences of the file FORMAT.COM, then rename or delete them.

1. Choose **Format** from the Disk menu in PC Tools Desktop.

   or

   From DOS, type

   `PCFORMAT` Enter

   If a password has been assigned, enter it and choose **OK**.

   The Drive Selection dialog box appears.

2. If you are formatting a floppy disk, insert it in the drive.
3. Select the drive you want to format.

Formatting a Disk

1. Select the formatting method.

   Safe Format: Formats the disk so that it can be recovered using Unformat. This option checks each track, reformats it if it is unused or bad, rewrites the data, and clears the root directory and File Allocation Table (FAT).

   Quick Format: Quickly reformats an already-formatted floppy disk so that it can be recovered using Unformat. Unlike the other formatting methods, it can be used on a RAM disk or Bernoulli box. This option erases the root directory and FAT, but does not check the disk media or erase any data.

   Full Format: Very thoroughly formats the disk so that it can be recovered using Unformat. This option is not available on a hard disk. Typically, you won't use this option; Safe Format is quicker and almost always just as effective. However, Full Format can sometimes be used to repair a disk with marginal sector IDs. This option reads each track, formats each track, rewrites the data, and clears the root directory and FAT.

Destructive Format: Formats the disk and erases all data on it. A disk formatted with this option cannot be recovered by Unformat. Use Destructive Format only for data security purposes—for example, when reusing a floppy disk that contained confidential data. This option is not available for a hard disk. This option formats each track and erases the root directory and FAT.

2. Select **Install system files** to create a bootable disk. This option copies files for the operating system currently in use onto the disk being formatted.
3. Select **Save Mirror Information** if you have already used Mirror on this disk and want to run it before formatting. This takes extra time but, improves your chances of recovering files from the disk later, if necessary. This option is not available if you chose Destructive Format.

   For details about Mirror, see the *Mirror* chapter.
4. If you want, enter a volume label to identify the disk.

   Volume labels can be up to 11 characters long.
5. Select the size of the formatted disk.

   This option is only available for floppy disks. It is not available if you choose Quick Format.

NOTE *Use the proper type of disk for the format you choose. For example, formatting a 720K disk as 1.44MB may produce unpredictable results. Furthermore, a disk that has been incorrectly formatted may be unrecoverable using Unformat.*

6. Choose **OK**.

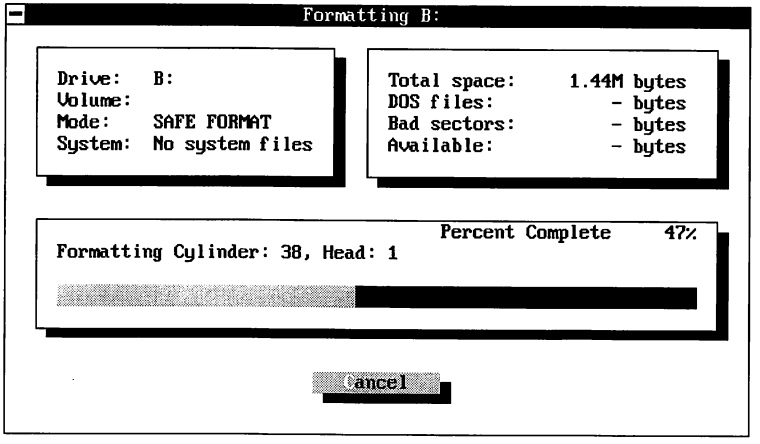
   If there are any files or directories on the selected drive, PC Format lists them for you.

   ▶ Choose **OK**, or choose **Cancel** to return to the Select Format Options dialog box.

   For details on the window you see during formatting, see "The PC Format Progress Window," following.
7. After the disk is formatted, you can format another disk or exit from PC Format.

The PC Format Progress Window

You can monitor the format's progress in the PC Format progress window:



Drive: Specifies the drive letter of the disk you are formatting.

Volume: Specifies the name you entered as the volume label, if any.

Mode: Specifies the formatting method you selected: safe, quick, full, or destructive.

System: Shows whether system files will be installed on this disk.

Formatted capacity: Specifies the disk size you specified for a floppy disk, or the size of a hard disk.

System files: Specifies the amount of space taken up by system files at the beginning of the disk.

Bad clusters: Specifies the amount of disk space that is damaged and therefore unavailable for data.

NOTE *If there is a large number of bad clusters, or the format appears to run very slowly when formatting a floppy disk, you may have selected the wrong format size for the media—for example, you may be trying to format a 360K disk as 1.2M.*

Usable capacity: Specifies the amount of disk space that will be available for data. It is the formatted capacity minus the space allotted for system files and bad clusters.

Status Area: Updates throughout the formatting process to tell you how much of the disk has been formatted (expressed as a bar graph with a percentage).

Command-Line Options

If you start PC Format with a drive letter as an option, you won't see the program dialog boxes. You should specify all other formatting options on the command line as well.

If you do not specify a drive letter, then all other options are ignored, and you should use the program dialog boxes to specify them.

NOTE *There are additional command-line options that you can use to control program display and mouse operation. See the* Global PC Tools Command-Line Options *chapter in* Part 4 General Reference *in this volume or type* `PCFORMAT /VIDEO`.

Floppy Disk Options

Use the following command syntax at the DOS prompt to format floppy disks:

```
PCFORMAT d:   [/1] [/4] [/8] [DESTROY] [/F]
              [/F:nnn] [/N:nn] [/P] [/Q] [R] [/S]
              [/T:nn] [TEST] [/V:volume name]
              [/?] [/VIDEO]
```

The *d*: option must be the first option and must be preceded by a space. The space is optional for all other options.

WARNING Any time you try to format a disk in a drive that supports multiple densities, PC Format, like DOS, will attempt to format the disk to the maximum capacity of the drive. To avoid this, you must specify additional options, as noted below, or lower-density disks will not be correctly formatted.

Option	Description
d:	The letter of the drive you want to format followed by a colon (for example, C:).
/1	Specifies a single-sided format.
/4	Formats a 360K or 180K floppy disk in a 1.2MB (high-capacity) drive. This allows use of low-capacity formats in high-capacity drives. However, disks formatted with this option in a 1.2MB drive cannot be read reliably in low-capacity (360K) drives.
/8	Formats a disk with 8 sectors per track instead of the normal 9 (for 360K floppy disks) or 15 (for 1.2MB disks). This allows compatibility with older versions of DOS (pre-2.0) which only supported 8 sectors per track.
/DESTROY	Specifies a destructive format. Formats the disk and erases it.

Continued

Option	Description
/F	Like /R, but also deletes all files.
/F:*nnn*	Formats the disk to the specified size. Valid numbers are 160, 180, 320, 360, 720, 1200, 1440, and 2880.
/N:*nn*	Specifies the number of sectors per track to format. Valid numbers are 8, 9, 15, and 36.
/P	Prints the information on the screen to LPT1.
/Q	Specifies a quick format of an already-formatted disk. This option erases the directory and FAT, but will not read the data, format each track, then rewrite the data.
/R	Revitalizes the disk by reformatting and rewriting every track. The FAT, root directory, and data will remain intact. The /R option cleans up marginal sector IDs, but makes no other changes to the disk. This is the same as the Revitalize a Disk option in DiskFix. *This option also requires the /4, /8, or /F:nnn option, or the /N:nn and /T:nn options.*
/S	Copies the operating system files to the disk. This is necessary if you want the disk to be bootable.
/T:*nn*	Specifies the number of tracks to format.
/TEST	Simulates the format, without actually writing to the disk.
/V	Prompts you to enter a volume label.
/V:*label*	Allows you to write a volume label on the disk. Instead of *label*, type the name for the newly formatted hard disk.
/?	Displays command-line help for PC Format options.
/VIDEO	Displays command-line help for PC Format program display and mouse options.

NOTE *The /N and /T options must be used together. The sectors per track cannot be specified without also specifying the numbers of tracks to format. The /N and /T options are used to format a disk to less than the normal capacity of the drive and are not normally used. This can be done instead with the /F:nnn option.*

Floppy Disk Examples

```
PCFORMAT A: /4
```

This command formats a 360K disk in drive A, which is a 1.2MB drive.

```
PCFORMAT B: /F:720
```

This command formats a 720K disk in drive B, which is a high-density (1.44MB) drive.

```
PCFORMAT A: /4/R
```

This command revitalizes the 360K disk in drive A.

Hard Disk Options

Use the following command syntax at the DOS prompt to format hard disks:

```
PCFORMAT d:     [/S] [/V] [/P] [/Q] [/TEST] [/?]
                [/VIDEO]
```

The /P, /Q, and /TEST options are explained in "Floppy Disk Options," earlier.

Option	Description
d:	The letter of the hard disk to be formatted.
/S	Copies the operating system files (BIOS, DOS, and COMMAND.COM) to the hard disk in order to make it bootable. Before using /S, start the system with the same version of DOS that you want transferred to the hard disk.
/V	Prompts you to enter a volume label.
/V:*label*	Allows you to write a volume label on a hard disk. Instead of *label*, type the name for the newly formatted hard disk.
/?	Displays command-line help for PC Format options.
/VIDEO	Displays command-line help for PC Format program display and mouse options.

Option Combinations

The following table shows you which options may be used together. A bullet (•) at the intersection indicates the options may be used together.

	V	S	Q	P	TEST	1	4	8	N + T	F:*nnn*	R	F	DESTROY
V	•	•	•	•	•	•	•		•	•		•	•
S	•		•	•	•	•	•	•	•	•		•	•
Q	•	•		•	•								
P	•	•	•		•	•	•	•	•	•	•	•	•
TEST	•	•	•	•		•	•	•	•	•	•	•	•
1	•	•		•	•		•	•	•		•	•	•
4	•	•		•	•	•		•			•	•	•
8		•		•	•	•	•				•	•	•
N+T	•	•		•	•	•					•	•	•
F:*nnn*	•	•		•	•						•	•	•
R				•	•	•	•	•	•	•			
F	•	•		•	•	•	•	•	•	•			
DESTROY	•	•		•	•	•	•	•	•	•			

FileCheck

FileCheck checks the integrity of your disk files and reports disk fragmentation, lost clusters, cross-linked files, FAT errors, and archived files. FileCheck is designed to be a complement to DOS CHKDSK, not a replacement for it.

You can run FileCheck periodically to check the amount of fragmentation on your hard disk or optionally use FileCheck to check for cross-linked files. You can also configure FileCheck to report when disk conditions reach a specified level. For example, you can configure FileCheck to report when file fragmentation exceeds 5% and remind you to run Compress. (See the *Compress* chapter in this part for more information about file fragmentation.)

Here's what you'll find in this chapter:

- **Starting FileCheck** explains how you run FileCheck from DOS, and what the results look like when displayed on screen.
- **Command-Line Options** describes the command-line options you can add to the FileCheck to control the way it works.
- **Using FileCheck in a Batch File** explains how you use FileCheck commands in a batch file so that it checks your computer every time you start up.

Starting FileCheck

▶ From DOS, type

`FILECHK` Enter

or

`FILECHK` *`d:`* Enter

Where *`d:`* is the letter of the disk drive you want to check.

FileCheck scans your current disk or the specified disk for disk-related errors. A report looks something like this:

```
    850 archived files found.
    9 fragmented files found.
    21 total fragments
    1 percent of total disk fragmentation.
FileCheck Complete!
```

Command-Line Options

Use the following command syntax in a batch file or from the DOS prompt:

You must use a drive letter, followed by a colon and a space. You can use multiple options as long as you can use a slash (/) or a hyphen (-) to begin each option.

```
FILECHK  d: [/ARC] [/BATCH] [/LIST] [/P] [/Q] [/?]
```

Option	Description
d:	Specifies the drive you want FileCheck to analyze.
/ARC	Shows percentage of archived files instead of file fragmentation.
/BATCH	Displays information about running the program in a batch file.
/LIST	Displays a list of the fragmented files along with the number of fragments.
/P	Pauses displayed listings at each screenful.
/Q	Turns off screen display — quiet mode — ideal for batch files.
/?	Displays information about options on the screen.

Examples

```
FILECHK /LIST /P
```

This runs FileCheck and prints a list of fragmented file names on screen pausing at each screenful.

```
FILECHK D: /ARC
```

This checks archived file information on the D drive.

```
FILECHK /BATCH
```

This shows the list of commands that can be used in a batch file.

Using FileCheck in a Batch File

You can run FileCheck in a batch file so that it checks your disk each time you start your computer. You can also add FileCheck commands in your batch file to run other programs.

Use the following DOS error codes along with the IF ERRORLEVEL statement in the batch file.

Error Code	What It Means
0	No fragmentation, errors, or archived files (if using the /ARC option) were encountered.
1-100	The specified percentage of fragmentation (or archived files if using the /ARC option) was encountered, where the number represents a percentage from 1 to 100%.
101	FileCheck found cross-linked files.
102	FileCheck found lost clusters.
103	FileCheck found mismatched FAT tables.

Example Batch File

The following batch file shows how to implement FileCheck and run DiskFix, CP Backup, and Compress if errors are found:

```
@echo off
REM Beginning of process for drive C:
c:\pctools\filechk c: /q
REM If errors found, run DiskFix
If errorlevel 101 goto run_dfc
:run_arcc
REM Checks for % files with archive bit set
c:\pctools\filechk c: /arc /q
REM If errors found, run DiskFix
If errorlevel 101 goto run_dfc
REM If % archive bits is 5% or more, run CP Backup
If errorlevel 5 goto run_buc
REM If % archive bits is less than 5%, skip CPBackup
and do fragmentation check
goto run_cpfrag
:Run_buc
REM runs CP Backup
c:\pctools\cpbackup c:
goto run_cpfrag
:Run_cpfrag
REM Checks for fragmentation factor
c:\pctools\filechk c: /q
REM If errors found, run DiskFix
If errorlevel 101 goto Run_dfc
REM If % fragmentation is 5% or more, run Compress
If errorlevel 5 goto Run_cpc
REM If % fragmentation is less than 5%, goto end
goto end_itc
:Run_cpc
REM Runs Compress
c:\pctools\compress c:
REM Runs DiskFix to check for errors and fixes if
necessary
c:\pctools\diskfix c: /test
REM After ending Compress, end process
goto end_itc
:Run_dfc
REM Runs DiskFix in automated repair mode
c:\pctools\diskfix c: /test
REM After fixing errors (if any), check archive
percentage again
goto Run_arcc
REM End of session for drive C:
:end_itc
```

Compress

Compress optimizes your hard disk's performance by correcting file fragmentation and by physically rearranging files on the disk. Compression improves disk-access speed and increases the chance of successful data recovery.

File fragmentation is undesirable for the following reasons. Disk access to fragmented files is slower, which can significantly affect the performance of programs that access the disk frequently, for example, database applications. If you have fragmented files and Delete Protection is not active when files are deleted, Undelete may be unable to recover them perfectly. If you have fragmented files and do not run Mirror, Unformat may be unable to recover all your data after an accidental format.

With a large hard disk full of files, Compress utilizes upper memory (memory between 640K and 1 MB), if you have it, to allow you to defragment more files. Compress can defragment in excess of 10,000 files.

Here's what you'll find in this chapter:

- **Before You Use Compress** explains some of the precautions you should take before running Compress.
- **Starting Compress** explains how to start Compress and what you'll see when you start.
- **Analyzing the Disk** explains how to interpret analysis results that will help you decide how to compress the disk.
- **Compressing a Disk** describes the steps you take to compress your disk, using the default configuration.
- **Changing to a Different Drive** explains how to change from the current drive to another drive.
- **Configuring the Compression** describes the different compression techniques you can choose.
- **Specifying Compression Options** describes the various options you can set before performing a compression, such as methods for ordering files and directories, or sorting files.

- **Moving Files** explains how to specify files that Compress may move if necessary, or files that you do not want Compress to move.
- **Command-Line Options** provides the Compress command-line options along with descriptions.

Before You Use Compress

Before compressing your disk, you should know the types of drives Compress works with, remove memory-resident programs that access the disk, and recover deleted files.

Supported Drives

Compress is intended for local PC disk drives. Compress will *not* work on a Novell network file server, on any networked drive, or on OS/2 volumes.

Removing Memory-Resident Software

Central Point programs, mouse drivers, and most device drivers are safe to use with Compress. However, before you start Compress, you should unload other memory-resident programs that could access the disk during compression, including the DOS utility FASTOPEN. If you are not sure if a TSR is safe, remove it. An easy way to do this is to boot the computer from the emergency disk.

If you have Central Point memory-resident programs loaded and get a message about not having enough memory to run Compress, remove some of those memory-resident programs and run Compress again.

WARNING Compress is compatible with PC-Cache and Super PC Kwik. Unload any other disk-caching programs before using Compress.

Failure to unload the cache could result in data loss or loss of access to the disk. Before running Compress on your hard disk, do a full backup to ensure the safety of your data in the unlikely event a problem arises.

Compress does not run under Windows and should not be run from any other multitasking system, such as MS-DOS's task swapper. (Compress does not run from PC Tools Task Switcher.) Do not use Compress on a network drive or on a drive that is being mapped to another system with DriveMap. Doing so may cause data loss.

Recovering Deleted Files

If you need to recover deleted files that were *not* protected by the Delete Sentry method of Delete Protection, use Undelete *before* compressing the drive (see the *Undelete* chapter).

Compress clears the file PCTRACKR.DEL. This destroys the last traces of files protected by the Delete Tracker method of Delete Protection.

If you have Delete Sentry turned on, you do not need to recover deleted files before compressing a drive. Delete Sentry files remain intact in a hidden directory.

Starting Compress

- Choose **Disk Optimization** from the Tools menu in PC Tools Desktop.

  or

  From DOS, type

  COMPRESS Enter

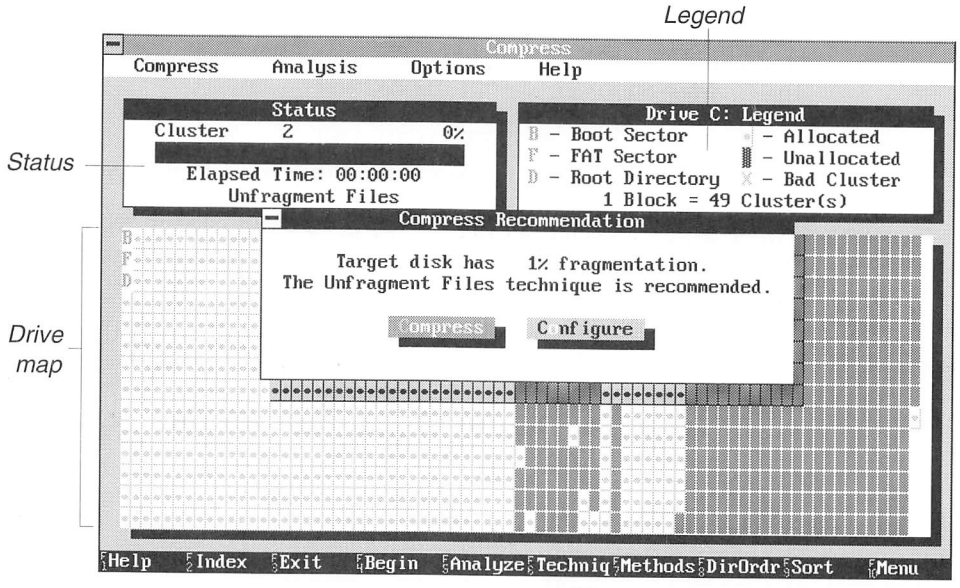
  If a password has been assigned, enter it and choose **OK**.

  The Compress window appears and Compress recommends an appropriate compression technique (or no compression), based on a quick analysis of your disk.

Repairing Disk Problems before Proceeding

If Compress detects problems with your hard disk that indicate it cannot complete compression safely, it recommends that you run DiskFix before proceeding. A DiskFix button appears in a message dialog box so you can go directly to DiskFix. When the problem is repaired, DiskFix displays the DOS prompt; run Compress again.

What You See



Drive map: Displays a graphic representation of all the files on the selected drive. The more fragmented the display looks, the more fragmented your files and free space are. As Compress reorders your files and disk space, this display changes.

Status: Shows the elapsed time, the currently selected compression technique, and what percentage of the process is complete.

Legend: Identifies the drive currently displayed on the drive map and the drive map symbols that represent the boot area, File Allocation Table (FAT), root directory, files (allocated clusters), free space (unallocated clusters), and bad clusters.

Each block on the drive map may represent more than one cluster of disk space and more than one file. The legend tells how many clusters are represented by each map block. You can display a list of the files represented by a given block (see "Showing the Files in Each Map Block," later in this chapter).

Analyzing the Disk

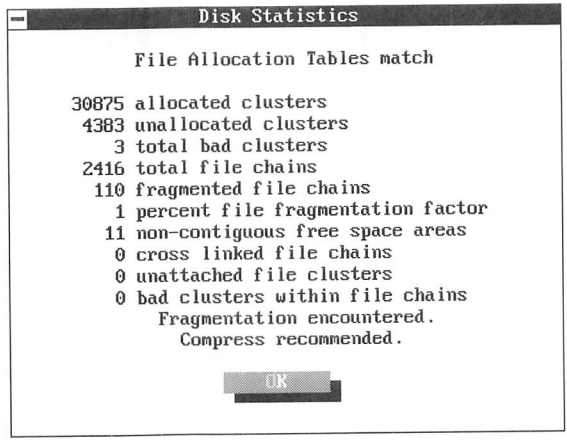
Before you begin the compression, you can analyze the disk. Commands from the Analysis menu display results that help you decide how to compress the disk.

Viewing Disk Statistics

To see if there are fragmented files on your disk or any undetected bad clusters, choose **Disk Statistics** from the Analysis menu or press F5.

NOTE *If you have any cross-linked file chains, unattached file clusters, or bad clusters within file chains, these indicate problems with your directories that the Repair a Disk option of DiskFix can correct. You need to use DiskFix to correct these problems before you can compress this disk.*

The Disk Statistics panel tells you how space is currently allocated on the disk and recommends a compression technique if needed. (Compress recommends a compression technique as soon as you start the program; Disk Statistics gives you some of the technical details about that recommendation.)



The number of allocated clusters is the amount of disk space in use. Unallocated clusters are free disk space. The total bad clusters are those already marked as bad before you analyzed the disk.

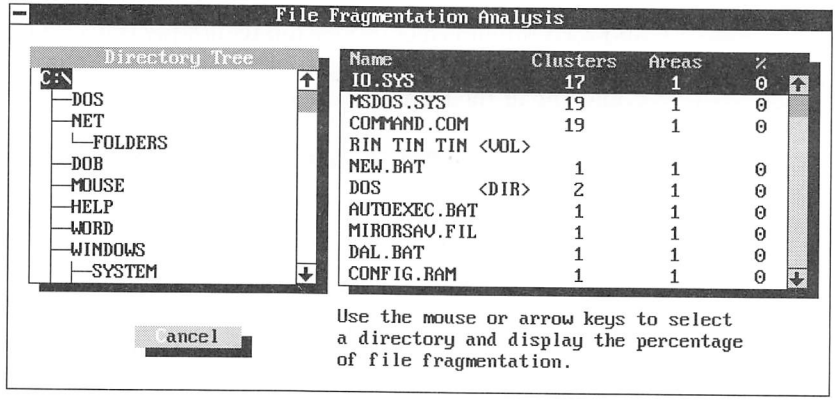
The number of fragmented file chains indicates how many files and directories are fragmented. The next line shows this as a percentage of all the files on the disk. The longer it has been since you have run Compress, the higher this number is likely to be. If it is zero, there are no fragmented files.

NOTE *This panel may show 1% file fragmentation after you run Compress from memory-resident PC Tools Desktop. This is due to temporary files built by the resident PC Tools Desktop program and is not a cause for concern.*

Non-contiguous free space indicates how many pieces the unallocated space is divided into. This should be kept small because the next time a file is created (or an existing file grows), DOS will allocate these areas to the file. If there are many small pieces instead of one large piece, the new or enlarged file will likely be highly fragmented. This will make access to it slower.

Analyzing Individual File Fragmentation

To see which files are fragmented and how fragmented they are, choose **File Fragmentation Analysis** from the Analysis menu. (Ordinarily, you won't need to use File Fragmentation Analysis. If Disk Statistics shows there are fragmented files, you can compress the disk.)



The Name column lists files and directories, with directories identified by <DIR> following the name. The Clusters column shows the total number of clusters the file occupies. The Areas column shows the number of pieces the file is broken into (an unfragmented file has "1" in this column). The % column shows the percentage of fragmentation for that file or directory.

To change the directory displayed in the file list, select a directory from the Directory Tree.

Showing the Files in Each Map Block

Each block (symbol) on the drive map may represent more than one file. You can examine a list of the clusters and files represented by any block. If the Compress drive map indicates damage to a block, this is a good way to find out which files are actually damaged.

- Click the block you want to examine with the mouse.

  or

  Choose **Show Files in Each Map Block** from the Analysis menu.

  The first block in the drive map begins to blink. To select the block you want to view, use the arrow keys to move the cursor to the block and then press Enter.

Compressing a Disk

Use the following procedure when you know your current Compress configuration is set the way you want it.

If you want to change or check the configuration, see "Changing to a Different Drive" and "Configuring the Compression," later in this chapter.

1. To use the recommended compression technique on the current drive, without changing any of the current configuration, choose **Compress**.

   A message reminds you to remove memory-resident programs other than Central Point programs from memory.

2. Choose **OK**.

   A message appears that lets you know Compress is sorting directories and preparing for disk optimization. Once compression begins, you will see the drive map change as the compression progresses.

   - Press Esc at any time to interrupt the compression. Compress will stop safely and leave your disk in a partially reorganized state.

WARNING Do not turn off your computer while running Compress. Compress reorganizes the physical layout of files and directories on the disk. Data could be lost if you turn off the power at a critical moment.

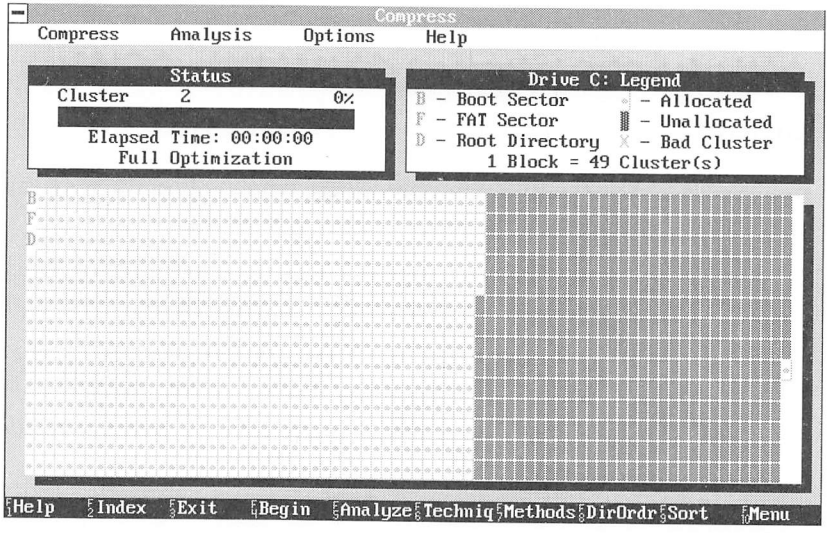
When compression is finished, you are given the option to run Mirror, exit to DOS, or remain in Compress without running Mirror.

3. Choose **Mirror**.

   Mirror is an essential part of Central Point's data protection. Running Mirror when Compress is finished updates the Mirror file to reflect the new physical organization of the compressed disk.

   Compress looks for the Mirror file in the current directory and in the directory from which the Compress program was run. If the Mirror file is not in either of these locations, Compress lets you know. In that case, run Mirror from the DOS prompt after you leave Compress.

   After compression, the drive map will look similar to the following screen if Full Optimization was the recommended compression technique:



   The left side of the screen represents the beginning of your hard disk drive. All your files (represented by the dot characters) have been moved to the beginning. All the free space (represented by the solid blocks) is at the end of the disk.

   If Compress recommends that you defragment files, you may see free space between your files, because that compression technique won't move free space to the end of the disk.

4. When you exit from Compress, choose **Reboot** in the System Reboot Recommendation dialog box. (Choosing **Exit** returns you to DOS without rebooting.)

WARNING Failing to reboot the computer after Compress finishes running may cause you to lose data when you run other memory-resident programs, since the data on the disk has been physically reorganized.

Function Keys

The following function keys are available in Compress:

Function Key	Description
F1 Help	Provides online help.
F2 Index	Displays the Help index.
F3 Exit	Exits from Compress.
F4 Begin	Begins the compression.
F5 Analyze	Analyzes the disk to determine if you need to compress the disk.
F6 Techniq	Allows you to select a compression technique.
F7 Methods	Allows you to select a directory and file ordering method for your disk.
F8 DirOrdr	Allows you specify the directories to place at the beginning of the disk for faster access.
F9 Sort	Allows you to select a sort method for the files in each directory.
F10 Menu	Activates the horizontal menu bar.

Changing to a Different Drive

1. Choose **Configure** in the Compress Recommendation dialog box.

   The Options menu appears.

2. Choose **Choose Drive** from the Compress menu.

3. Select the drive you want to compress and choose **OK**.

   Compress analyzes the new drive and recommends an appropriate compression technique (or no compression).

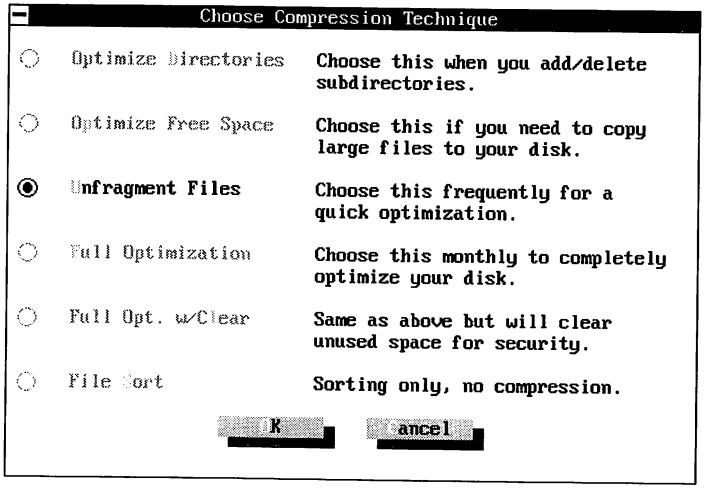
   ▶ You can further configure the compression. Go to step 2 of the next procedure.

   or

   If you want to begin the compression as currently configured, go to step 5 of the next procedure.

Configuring the Compression

1. Choose **Configure** in the Compress Recommendation dialog box.
   The Options menu appears.
2. Choose **Compression Technique** from the Options menu to change to a different compression technique, or press F6.


Choose Compression Technique
Optimize Directories
Choose this when you add/delete subdirectories.
Optimize Free Space
Choose this if you need to copy large files to your disk.
Unfragment Files
Choose this frequently for a quick optimization.
Full Optimization
Choose this monthly to completely optimize your disk.
Full Opt. w/Clear
Same as above but will clear unused space for security.
File Sort
Sorting only, no compression.
K
ancel

Optimize Directories: Moves directories to the front of the disk for faster access, but does not defragment files. Use this technique after you have added or deleted directories.

Optimize Free Space: Moves all data clusters currently in use to the front of the disk. This puts all the free space at the end of the disk, but does not defragment files. Use this technique before you copy large files to your disk to ensure that they won't be fragmented.

Unfragment Files: Defragments all your files but does *not* move all the free space to the back of your disk. Although your current files will be unfragmented, the next file created might be highly fragmented if DOS needs to break it up to fill the free spaces scattered about your disk. If you use this technique, use it often so that new files don't stay fragmented for long.

Full Optimization: Defragments all your files, arranges files and directories according to the options from the Options menu, and moves all the free space to the back of your disk. This technique is the most complete, but it takes longer than the others to run. Use it once a month to completely optimize your disk.

Full Optimization with Clear: Performs a Full Optimization and erases all data in clusters not currently in use. This clears clusters occupied by deleted files. (For most versions of DOS, deleting doesn't actually destroy the data in a file—it only changes the file's name so that the DOS DIR command won't list it.) This may take some extra time. Use this technique so no one can see the information in your deleted files.

Files protected by the Delete Sentry method of Delete Protection will not be cleared because they are in a hidden directory. To erase Delete Sentry files, purge them using Undelete.

File Sort: Rearranges the file names within each directory listing, according to the sort order that you specify with the **File Sort Options** command from the Options menu. No compression occurs. The default is No Sorting, which leaves file names arranged as they currently appear in the directory listing.

NOTE *If you want, you can further define the compression. See "Specifying Compression Options" and "Analyzing the Disk," in this chapter.*

3. If you need to print a report, choose **Print Report** from the Options menu *before* beginning the compression and then choosing **Printer** or **Disk**.

   The report includes the time it took to perform the compression, the options selected, and the numbers of used, unused, and bad clusters on the disk.

   Reports are printed to the LPT1 printer. Reports sent to disk are saved in the file COMPRESS.RPT in the root directory of the compressed drive.

4. Choose **Begin Compress** from the Compress menu or press F4.

   A warning dialog box reminds you to remove memory-resident programs other than Central Point programs from memory. However, you can leave PC-Cache resident.

5. Choose **OK**.

   Compress lets you know that it is sorting directories and preparing for disk optimization. Once compression begins, you will see the drive map change as the compression progresses.

   ▶ Press Esc at any time to interrupt the compression. Compress will stop safely and leave your disk in a partially reorganized state.

WARNING Do not turn off your computer while running Compress. Compress reorganizes the physical layout of files and directories on the disk. Data could be lost if you turn off the power at a critical moment.

6. When compression is finished, you can run Mirror, exit to DOS, or remain in Compress without running Mirror. Choose **Mirror**.

   Mirror is an essential part of PC Tools data protection. Running Mirror when Compress is finished updates the Mirror file to reflect the new physical organization of the compressed disk.

   Compress looks for the Mirror file in the current directory and in the directory from which the Compress program was run. If the Mirror file is not in either of these locations, Compress lets you know. In that case, run Mirror from the DOS prompt after you leave Compress.

   After compression, if you used the Full Optimization, Full Optimization with Clear, or Optimize Free Space compression techniques, all your files will be moved to the beginning of the disk. All the free space is at the end of the disk. (See the Compress window shown after step 3 in the "Compressing a Disk" procedure earlier in this chapter.)

   If you selected the Optimize Directories, Unfragment Files, or File Sort compression techniques, you may see free space in between your files, because those options won't move free space to the end of the disk.

7. When you exit from Compress, choose **Reboot** in the System Reboot Recommendation dialog box.

   or

   Choose **Exit** to return to DOS without rebooting.

WARNING Failing to reboot the computer after Compress finishes may cause you to lose data when you run memory-resident programs, since the data on the disk has been physically reorganized.

Specifying Compression Options

The following options allow you to choose where you place directories and files on your disk. Selected options take effect when Compress optimizes your disk according to the compression technique you've selected.

TIP *If you save the current configuration when you exit from the program, compression time will be shorter the next time you run Compress without changing any options.*

Ordering Methods

You can specify the order in which directories and files are placed on the disk.

If you also define an order for specific directories (see the next section, "Selecting a Directory Order"), Compress applies that directory order to the overall scheme for directories and files established by the ordering method you select in this procedure.

- Choose **Ordering Methods** from the Options menu or press F7 and select from the following methods:

  Standard: Places directories at the beginning of the disk, followed by all files in any physical order. If you define a directory order, directories will be placed at the beginning of the disk in the order you specify. If you do not define a directory order, the directories in your PATH statement (if any) are placed before all other directories at the beginning of the disk.

  Selecting the Standard method allows Compress to move files wherever it wants as it defragments your hard disk. Compress generally runs much faster if you select this option.

  File Placement: Places directories at the beginning of the disk (arranged in the directory order you defined, if any), followed by the files that you specified with the **Files to Place First** command, followed by all other files. Files with .COM and .EXE extensions are placed first unless otherwise specified.

  Directories First: Moves all directories to the beginning of the disk (arranged in the directory order you defined, if any), followed by all files arranged by directory. This option maximizes hard disk performance since it positions data and program files in proximity to one another.

  Directories with Files: Places each directory just before its files (with directories arranged in the directory order defined, if any). This method may be more efficient if you normally create and delete entire directories rather than files.

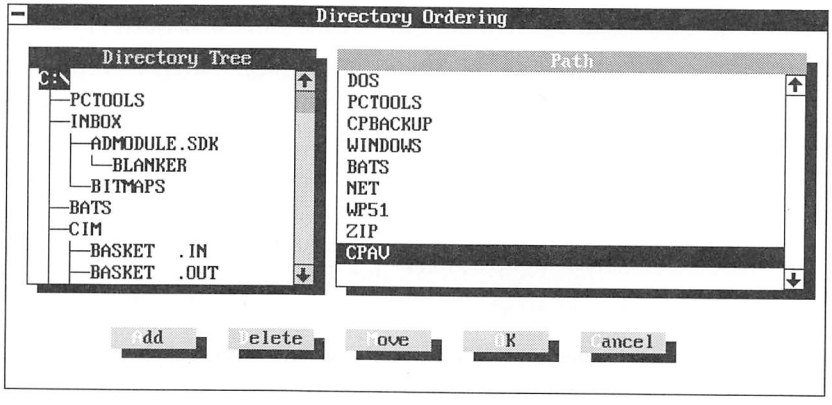
Selecting a Directory Order

You can optimize disk access for directories that you use most often by putting them at the beginning of the disk. The directory order that you define will be the basis for the overall order of directories and files established by any of the ordering methods (see the previous section, "Ordering Methods").

- Choose **Directory Order** from the Options menu or press F8.

  By default, the Path list displays directories that are specified in the PATH statement in your AUTOEXEC.BAT file.

  Directories you select from the Directory Tree appear in the Path list when you choose **Add**. You can **Delete** and **Move** directories once they are in the directory list.



  All directories that appear in the Path list when you choose **OK** are moved to the beginning of the disk during the compression, in the order listed. This does not affect the order in which you see directories in the directory list display; to change the order in which you view files and directories, choose **File Sort Options**.

Sorting Files within Directories

If you specify how Compress should sort files within directories, your files will be arranged in the order you select once the compression is complete.

- Choose **File Sort Options** from the Options menu.

  or

  Press F9 and select file sorting by **Date/Time**, **File Name**, file **Extension**, or **Size** (plus **Ascending** or **Descending**).

The default is **No Sorting**.

If you select any option other than File Name, Compress sub-sorts the directories by name. For example, if you select sorting by Extension, then all files in a directory with a common file extension will be sorted by name within that extension.

Selecting Files to Place First on the Disk

This option, when selected with the File Placement ordering method, lets you speed access to files that you use frequently by moving them to the beginning of the disk.

- Choose **Files to Place First** from the Options menu.

  In the dialog box that appears, you can type in a new file specification. Use the DOS wildcards * and ? to specify groups of files. The default specifications *.EXE and *.COM will put all your program files at the beginning of the disk.

  - To remove a file specification from the list, select it and choose **Delete**.

    or

    To modify a file specification, select it and retype.

  When you choose **OK**, Compress moves all files that match the specifications to the beginning of the disk during the compression, in the order listed.

Moving Files

By default, Compress does not move or defragment files or directories with hidden attributes or files in a hidden directory. Files in the \SENTRY directory, however, may be moved. Many copy-protection schemes, especially on hard disks, depend on hidden files and directories. If Compress moved these hidden files or hidden directories, some copy-protected programs would no longer run.

Compress also does not move a fragmented file across a hidden file, because it would take an extremely long time. Because of this, on rare occasions a file might still be fragmented after Compress finishes. For example, if DOS started building a file in front of a hidden file and then extended it behind the hidden file, Compress would not move either file. If the fragmented file were accidentally deleted, Undelete would be able to recover it in most cases (especially if it was protected by Delete Protection).

Allowing File Movement

The Allow File Movement command lets you identify any files with hidden attributes that you want Compress to move if necessary. This is useful if you have hidden files for security reasons that you want to defragment. This feature is not recommended for the Windows *.PAR swap files or DOS system files (IO.SYS, MSDOS.SYS, IBMDOS.SYS, and IBMDOS.COM found in the root directory) that must remain in specific locations on the disk. If there are no files on your disk with hidden attributes, this option is disabled on the menu.

1. Choose **Allow File Movement** from the Options menu.

   The Allow File Movement dialog box displays the current list of files with hidden attributes that Compress does not move. As you select a file, the path line shows the directory where the file is stored. If you have multiple copies of a certain file, you can select the correct one.

2. Select the files you want Compress to move if necessary and choose **OK**.

   Selected files have a marker symbol to the left of the file name. The file names are used for this Compress session only.

   To remove file selections, choose **Clear**.

Specifying Unmovable Files

Compress moves a file with only a system attribute unless you list it in the Unmovable Files dialog box or give it a hidden attribute before you begin the compression.

The Unmovable Files command lets you identify any additional files that you don't want moved.

- Choose **Unmovable Files** from the Options menu.

  The Unmovable Files dialog box displays the current list of unmovable files. Hidden files that Compress does not move automatically do not appear in this list. The list is provided so you can tell Compress if there are additional files that you do not want moved, such as game files that may rely on disk placement to operate correctly.

  You can type in file names, up to a maximum of 10 unmovable files.

  - To remove a file from the list, select it and choose **Delete**.

    or

    To modify a file name, select it and retype.

Command-Line Options

Use the following command syntax in a batch file or at the DOS prompt:

```
COMPRESS d:  [/CD or /CS or /CU or /CF or /CC]
             [/OS or /OF or /OO or /OD]
             [/SF or /ST or /SE or /SS [/SA or /SD]]
             [/SKIPUMB or /SKIPEMS or /SKIPALL]
             [/NM] [/?] [/VIDEO]
```

Compress requires the /CD, /CS, /CU, /CF or /CC option to start compressing immediately, as you would want in a batch file. Without one of those options, Compress does run until you supply additional information.

NOTE *There are additional command-line options that you can use to control program display and mouse operation. See the* Global PC Tools Command-Line Options *chapter in* Part 4 General Reference *in this volume or type* `COMPRESS /VIDEO`.

Compression Options

Option	Equivalent Technique	Description
d:		The drive to be compressed. The default is the current drive.
/CD	Optimize Directories	Optimizes directories by moving them to the front of the disk. Does not defragment files.
/CS	Optimize Free Space	Optimizes free space by moving all data clusters to the front of the disk, leaving free space at the back. Does not defragment files.
/CU	Unfragment Files	Defragments files but does not move free space to the back of the disk.
/CF	Full Optimization	Starts a full compression.
/CC	Full Opt. with Clear	Starts a full compression and clears all unused sectors.

Ordering Method Options

Option	Equivalent Method	Description
/OS	Standard	Places directories at beginning of the disk, followed by all files.
/OF	File Placement	Places the files that you specified with the Files to Place First command after directories, followed by all other files.
/OO	Directories First	Moves all directories to the beginning of the disk, followed by all files arranged by directory.
/OD	Directories with Files	Places each directory just before its files.

Sort Options

Option	Description
/SF	Sorts by name.
/ST	Sorts by the date and time last modified.
/SE	Sorts by file extension.
/SS	Sorts by file size.
/SA	Sorts files in ascending order. You can use this with one of the "sorts by" options.
/SD	Sorts files in descending order. You can use this with one of the "sorts by" options.

Upper Memory Options

If you are using a memory manager (such as DOS 5's EMM.386, QEMM, or 386MAX) to access upper memory, Compress uses memory above conventional memory (above 640K) to increase the number of files it can defragment. Use the following options to force Compress not to use high memory.

Option	Description
/SKIPUMB	Disables the use of upper memory blocks (the 384K of memory between 640K and 1 MB). Compress attempts to use upper memory blocks, if available. If you don't want Compress to use upper memory blocks, use this option.
/SKIPEMS	Disables the use of expanded memory. Compress attempts to use expanded memory if you have it. If you don't want Compress to use expanded memory, use this option.
/SKIPALL	Tells Compress not to use any upper memory blocks.

Additional Options

Option	Description
/NM	Suppresses Mirror after Compress is finished. Always use Mirror after Compress. Use the /NM option ONLY if you will be running Mirror yourself immediately following Compress.
/?	Displays command-line help for Compress options.
/VIDEO	Displays command-line help for Compress video and mouse options.

Examples

```
COMPRESS C: /OD /SE /SA
```

This command tell Compress to arrange the files on drive C during the compression as follows: place the files in DOS order (directories with files) and sort the files by extension in ascending order. Since no compression technique was specified, this example sets these options and displays the Compress window. From there, you can use other commands available from the pull-down menus, begin the compression, or do both.

```
COMPRESS C: /CF /OD /SE /SA
```

This command starts compressing drive C using the Full Optimization compression technique and arranges the files on the hard disk in the order specified in the first example.

PC-Cache

PC-Cache is a disk-caching program that speeds data access by storing the most frequently used data where it is readily available in your computer's memory. It reduces the number of times the computer has to wait for the disk when reading and writing commonly used information.

For example, the directory information on a disk is read frequently. When PC-Cache is loaded, directory information can be stored in the cache. The next time directory information is needed, the cache supplies it rather than the disk.

It is safe to use PC-Cache while running other PC Tools programs, including Compress (this is not true with most other caching programs). PC-Cache is compatible with VDISK and RAMDRIVE, and with Windows versions 3.0 and 3.1.

Here's what you'll find in this chapter:

- **Starting PC-Cache from AUTOEXEC.BAT** explains how to install PC-Cache from your AUTOEXEC.BAT file. PC-Cache adjusts most of its settings automatically when it is loaded, in response to your computer's current conditions.
- **Viewing PC-Cache Status** describes status information.
- **Changing PC-Cache Temporarily** explains how to change PC-Cache's settings temporarily.
- **Unloading PC-Cache from Memory** explains how to unload PC-Cache.
- **Memory Utilization** describes the types of memory PC-Cache uses: conventional, high, extended, or expanded memory.
- **PC-Cache Default Configuration** describes the PC-Cache default settings. PC-Cache supports up to 26 drives, hard and floppy drives combined. This version of PC-Cache also supports removable drives.
- **Optimizing PC-Cache for Performance** explains how to use PC-Cache to the best advantage so you can improve your computer's speed and performance.
- **Command-Line Options** describes the command-line options you can add to your AUTOEXEC.BAT file or DOS prompt to load and use PC-Cache the way you want.

Starting PC-Cache from AUTOEXEC.BAT

Include PC-Cache in your AUTOEXEC.BAT file so it loads automatically every time you turn on your computer.

1. Use PC Config to load PC-Cache from your AUTOEXEC.BAT file.
2. Restart your PC by pressing Ctrl Alt Del.

   PC-Cache loads automatically and lists the current PC-Cache configuration.

TIP *If you use Compress regularly to defragment your hard drive, PC-Cache provides greater performance improvement. See the* Compress *chapter for more information.*

Changing the PC-Cache Configuration

Since PC-Cache adjusts itself automatically, the only changes you need to make for normal use are the size of the cache and the kind of memory used. The utility includes additional options to help with special circumstances.

1. Use any text editor to change the PC-Cache command line in your AUTOEXEC.BAT file.

   See "Command-Line Options" at the end of this chapter.
2. Restart your PC by pressing Ctrl Alt Del.

   PC-Cache loads with the new configuration.

Viewing PC-Cache Status

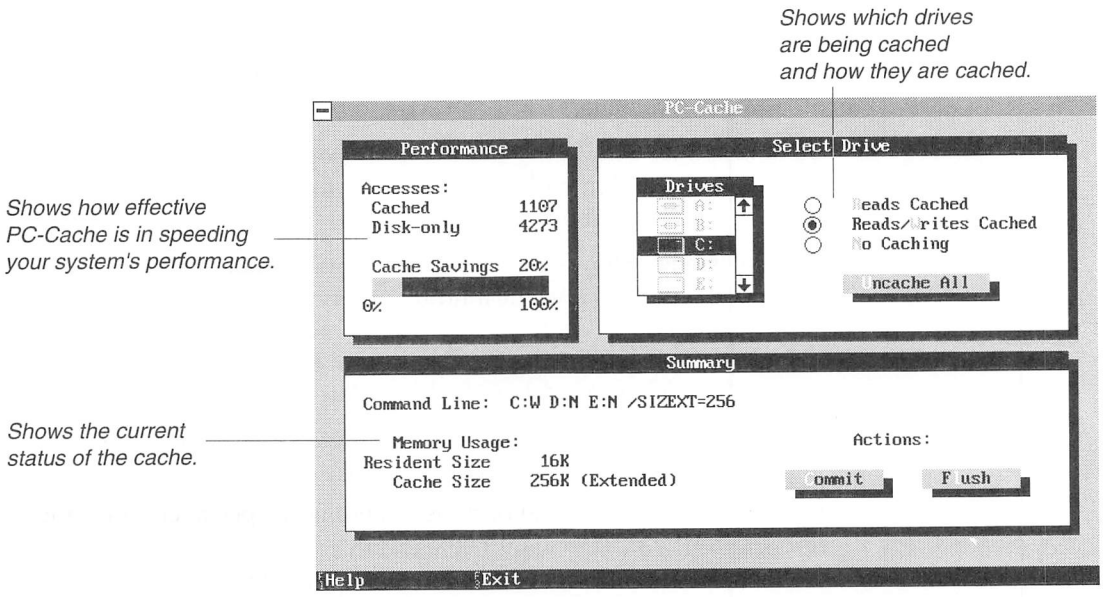
PC-Cache displays status information when it is loaded, unless you use the /QUIET option. You can check the status of PC-Cache at any time while it is memory-resident.

- To see the status window, from DOS type

  ```
  PC-CACHE
  ```

  The status window appears.

What You See



Performance panel: Shows how effectively PC-Cache speeds your system's performance.

> **Cached Accesses:** Shows the number of sectors of data that have been transferred to and from the cache since loading PC-Cache.
>
> **Disk-Only Accesses:** Shows the number of sectors of data that have been transferred to and from the disk since loading PC-Cache.
>
> **Cache Savings:** Shows approximately how efficiently the cache has been used in the current sampling period. This is a rough measure of how much your current processes are using the cache instead of the disk. The higher the percentage, the faster your system becomes.

Select Drive panel: Shows which drives are being cached and how they are being cached. You can change caching for any drive by selecting the drive and then a cache option. See "Changing PC-Cache Temporarily" for more details.

> **Reads Cached:** Stores in memory the data recently accessed from the disk. When your computer needs this information, it is available from memory, which is faster.
>
> **Reads/Writes Cached:** Adds a write delay. With writes cached, PC-Cache stores several disk-writing operations, then performs them all at once. This speeds up your computer by decreasing the number of times it must wait for disk access.

No Caching: Turns off PC-Cache for the selected drive.

Uncache All: Turns off PC-Cache for all of your drives at once.

Summary panel: Lists statistics about the current status of the cache, such as the current command-line settings for PC-Cache and its use of memory. You can also empty the cache.

Command line: Shows the command-line options you used when PC-Cache was loaded in memory. (See "Command-Line Options" later in this chapter for details about these options.)

Memory usage: Shows the amount of conventional memory PC-Cache uses (Resident Size) and the amount and type of memory where PC-Cache stores cached data (Cache Size). You can increase this amount beyond the default of 256K by starting PC-Cache with the appropriate command-line option. (See "Command-Line Options" later in this chapter for details.)

Actions: You can choose **Commit** or **Flush** to save to your disk immediately any write-delayed data in the cache.

Commit: Writes to your disk any data that is waiting for the next write opportunity. You may want to choose this option before ejecting a floppy disk that has the Reads/Writes Cached option. However, PC-Cache updates your disk very quickly and this command is rarely necessary for non-programmers.

Flush: Does the same thing as Commit and empties the current cache data from memory. This command, too, is rarely necessary.

NOTE *The amount by which PC-Cache will improve your computer's performance is affected by the following factors: the speed and type of the CPU (central processing unit); the speed of the hard drive; the degree to which the information on the hard drive is fragmented; and the type of work you do with the computer.*

Listing PC-Cache Status

You can also view cache statistics in a simple command-line listing. The following information is displayed: the amount and type of memory PC-Cache is using, the percentage of disk activity being performed from the cache instead of the disk, which drives are being cached, and how they are being cached (disk reads, disk writes, or no disk caching).

▶ From DOS, type

```
PC-CACHE /STATUS Enter
```

or

```
PC-CACHE /S [Enter]
```

The following example shows a PC-Cache status list:

```
Memory used by resident PC-Cache
256K bytes of extended (XMS) memory; 256K when Windows
runs.
17K bytes of conventional memory

Cache savings

22%

Drive caching modes (r, w, n = read, write, none)

A:r B:r C:w D:r E:r
```

Changing PC-Cache Temporarily

If you want to temporarily change the behavior of PC-Cache, you can do so from the command line or from the Status Window.

If another program is incompatible with PC-Cache, you can turn off the cache temporarily while using the other program, then turn it on when that program is finished. The cache remains resident in memory, even when off. This saves you from having to unload not only the cache, but also any other programs loaded in memory after PC-Cache.

Turning Off PC-Cache

- From DOS, type

  ```
  PC-CACHE/OFF [Enter]
  ```

  This command turns off caching for all drives, overriding any drives specified with the d: option. PC-Cache remains resident in memory, ready to be turned on again.

  or

  To turn off caching for specified drives, from the Status Window, perform the following steps:

  1. Select the drive icon of the drive you want to change.
  2. Select the kind of caching you want for the selected drive, described in the previous section.

3. Choose **Exit** or press F3.

   The Change PC-Cache Settings dialog box appears.

4. Choose **Yes** to save your changes and exit from PC-Cache.

Turning On PC-Cache

▶ From DOS, type

```
PC-CACHE/ON Enter
```

PC-Cache is back in effect, configured as specified when it was loaded.

or

From the Status Window,

1. Select the drive icon of the drive you want to change.
2. Select the kind of caching you want for the selected drive.
3. Choose **Exit** or press F3.

   The Change PC-Cache Settings dialog box appears.

4. Choose **Yes** to save your changes and exit from PC-Cache.

Unloading PC-Cache from Memory

If you want to reclaim memory or if you have continuing trouble with memory-resident programs that conflict with PC-Cache, you must unload PC-Cache rather than just turning it off.

1. Unload any other memory-resident programs installed after PC-Cache.
2. From DOS, type

   ```
   PC-CACHE/UNLOAD Enter
   ```

   or

   ```
   PC-CACHE/U Enter
   ```

   This change remains in effect until you restart your computer and your original PC-Cache settings are restored by the AUTOEXEC.BAT statement.

If you have configured PC-Cache to load from your AUTOEXEC.BAT file, use any text editor to place the DOS REMARK command (REM) at the start of the line containing PC-Cache. Then restart your computer by pressing Ctrl Alt Del.

Memory Utilization

PC-Cache uses conventional, high, extended, or expanded memory. The amount of memory that PC-Cache uses is determined either by a size option that you specify, or by an automatic default that adjusts itself according to the amount of available memory (see "PC-Cache Default Configuration" later in this chapter). It is best to store the cached data in extended or expanded memory, if available.

Conventional Memory

This is the normal memory used by DOS (up to 640K) for running applications. It should be used very sparingly for disk caching because you need as much available conventional memory for use by applications.

No matter what kind of memory PC-Cache uses for its disk cache, it always uses a small amount of conventional memory to install itself. The amount of conventional memory needed is called the *resident size*, which is determined by the size of the cache. Usually, the larger the cache size, the larger its resident size. For example, a 16K cache in expanded memory has a resident size of approximately 8K in conventional memory, while a 256K cache in expanded memory has a resident size of approximately 12K.

PC-Cache adjusts its resident size automatically to use the smallest possible amount of conventional memory. You can reduce the resident size even more by using the /MINI command-line option. See "Command-Line Options" later in this chapter for details.

High Memory

You can load the conventional memory portion of PC-Cache into high memory (that portion of memory above 640K and below 1024K, where extended memory begins) by using such programs as QEMM, 386MAX, and MS-DOS Version 5's EMM386 and their LOAHHI commands. However, if you load PC-Cache into high memory, it cannot use conventional memory for its cache.

PC-Cache automatically loads high when you are using DOS 5's EMM386.EXE, if high memory is available. (In this case, you do not need to add the LOADHI command.)

If the cache is loaded into high memory through one of these memory managers, a contiguous area of high memory 14K or greater is needed to load the program initially. The cache will then resize itself to use a smaller amount of high memory. For example, once it is loaded, a 64K expanded memory cache typically uses about 9K of high memory (in addition to the 64K of expanded memory); while a 64K extended memory cache uses about 10K of high memory.

PC-Cache is compatible with Windows when loaded into high memory.

Extended Memory

This type of memory is located above 1024K and is available on AT and PS/2 computers.

PC-Cache determines the best method of accessing extended memory by checking your computer's processor type and other options. If PC-Cache cannot access extended memory for some reason using the SIZEXT:*nnnn* option, you can use the BIOS method (SIZEXTB:*nnnn* option) to access extended memory. Also, on 286-class computers, PC-Cache checks to see if the system can handle fast memory transfer.

Expanded Memory

You can add expanded memory to any computer by inserting a memory card or by loading special software that creates expanded memory from extended memory. PC-Cache requires a Lotus/Intel/Microsoft-compatible expanded memory manager, Version 3.2 or 4.0.

NOTE *If you are using QEMM 6.x and its Stealth option, PC-Cache will not use expanded memory for its cache, even if you specify the /SIZEXP option. PC-Cache uses conventional memory for its cache instead.*

PC-Cache Default Configuration

PC-Cache's defaults are set to increase the speed of your computer as conservatively and efficiently as possible. PC-Cache adjusts most of its settings automatically each time it is loaded.

If you don't specify a cache size, PC-Cache checks your computer for installed memory and automatically configures the cache size according to the following guidelines:

If There is	Then PC-Cache Uses
At least 64K of extended memory available	All of it (up to 256K)
At least 64K of expanded memory available	All of it (up to 256K)
Less than 64K of both expanded and extended memory available	64K of conventional memory. If there is not 64K of conventional memory available, PC-Cache is not loaded.

NOTE *If PC-Cache loads high, it cannot use conventional memory for the cache. That means you need at least 64K of either extended or expanded memory available to use PC-Cache.*

The default settings for local hard drives is that delayed writing is on; for floppy disks and removable drives, read-only caching is on, and delayed writing is off. Delayed writing combines consecutive disk-writing operations and writes them all at once whenever DOS is idle.

Some versions of MS-DOS 3.1 will not work with delayed disk writing. If PC-Cache will not load, try including /WRITE:OFF in the PC-Cache startup command line.

WARNING Do not turn on the delayed writing to disk option for a write-protected disk. Doing so produces an error message that requires you to restart your computer and may cause data loss.

Optimizing PC-Cache for Performance

Use the following guidelines to customize PC-Cache for best performance.

PC-Cache Size and Memory

You can make the cache as large as possible, without interfering with other programs that use the same kind of memory.

- Select a cache size based on the size and type of memory you have. To check the types of memory your system has and how much of each is available, type `MI /Q` Enter at the DOS prompt.

  Generally, the bigger the cache, the faster your system will run. On average, cache performance increases rapidly until the cache size reaches 512K. Performance then increases moderately up to 1024K. After that, performance increases are fairly small.

- If you have a 386- or 486-class computer, you can use your extended memory as either extended or expanded memory. To do so requires memory management software such as QEMM, 386 MAX, or DOS 5's EMM386 that creates expanded memory from extended memory. In most cases, the cache will be faster using extended memory.

- If loading PC-Cache into extended memory locks your PC, try the /SIZEXTB:*nnnn* option. See "Command-Line Options" later in this chapter for more information.

PC-Cache Size and Windows

You can optimize the cache for use with Windows 3.0 and 3.1.

Load PC-Cache in extended or expanded memory (extended memory is preferred) and use the /WINSIZE:*nnnn* option in the startup command. The *nnnn* part of the option represents the size of the cache under Windows and makes more memory available for Windows in any mode (real, standard, or enhanced). The /WINSIZE:*nnnn* option causes the cache to shrink immediately, if possible, as soon as you run Windows. You must specify the size of the cache.

An extended memory cache will not shrink unless an extended memory driver is present (such as HIMEM.SYS or the XMS driver loaded by QEMM or 386MAX) and memory is not fragmented.

PC-Cache Size and Applications

Some applications use memory more intensively than others.

- Lotus 1-2-3 uses its own RAM space. A large cache is not effective, so most RAM should be left for Lotus. For systems with 1.5MB of memory, try a cache of 256K.
- Word-processing programs access their files frequently. Select a cache size big enough to store a typical document, then allow additional memory for the program "overhead."
- Database programs also access their files frequently, and they tend to be large. Determine the size of your largest database file, then add additional memory for program "overhead."

PC-Cache and DOS Buffers

Increasing the number of buffers specified by the DOS BUFFERS command in CONFIG.SYS does not increase the performance of PC-Cache and will slow your system's performance in the following cases:

- If DOS buffers and PC-Cache are placed in expanded memory (by using the DOS command BUFFERS /X), PC-Cache will slow down. For this reason, do not use the /X option with the BUFFERS command.
- In DOS 4.0 and later, you can use the BUFFERS command to read data ahead. (For example, in the command line BUFFERS=30,8 the 8 is the read-ahead option.) This slows the cache and is not recommended.

When Not to Use Write Delay

Write delay combines consecutive disk-writing operations and then writes them all at once to the disk within seconds. This speeds disk writing by minimizing the number of times the computer has to wait for disk access.

With write delay turned on, PC-Cache normally writes to disk whenever DOS is idle or if the cache fills with data. PC-Cache also writes to disk if it detects a problem of any sort, or if you restart the system (by pressing Ctrl Alt Del).

If you use a removable drive that you frequently remove, using write delays may cause errors if you remove the drive before the delayed writing is finished. For this reason, do not use delayed writing on removable drives that you expect to remove frequently.

WARNING Never use delayed writing on a write-protected disk. PC-Cache issues an error message that requires you to restart your computer and may cause data loss.

PC-Cache turns on delayed writing to disk by default on all hard drive volumes. If you have a Stacker volume (or use any other disk compression utility such as SuperStor), delayed writing improves the performance by about 20 percent.

WARNING Do not allow the compressed disk get completely full or you may lose data if PC-Cache has no room on the disk to perform the delayed write operation.

Command-Line Options

Use the following command syntax in your AUTOEXEC.BAT file or at the DOS prompt when loading PC-Cache. You can substitute an equal sign (=) for a colon in any command syntax except `d:x`.

Options to Use when Loading PC-Cache

```
PC-CACHE [d:x]
         [/LOW] [/MINI] [/NOBATCH]
         [/OK or /PAUSE or /QUIET]
         [/SIZEXP:nnnn or /SIZEXT:nnnn or
         /SIZEXTB:nnnn or SIZE:nnn]
         [/WIN or /WINSIZE:nnn]
         [/WRITE:ON or /WRITE:OFF]
```

Only one size option is allowed; you cannot mix conventional, expanded, and extended memory. If you do not include a size option, PC-Cache will use its default value (see "PC-Cache Default Configuration," earlier in this chapter).

Option	Description
d:	Specifies the drives you want to cache, overriding the defaults. If you don't specify a drive letter, the default settings are the following: floppy disk and removable drives are read-cached but not write-cached, hard disk drives are read- and write-cached, and network drives are ignored. You can specify multiple drives. Do not add a space between the drive designator and the option. Substitute one of the options specified below for x.
x	Overrides the defaults by specifying the type of cache, where R=the read-only cache is on, W=write-delayed caching is being used, N=no caching of this drive.

Continued

Option	Description
/LOW	Prevents PC-Cache from loading into DOS 5's upper memory blocks (UMBs), even if available. Forces PC-Cache to load itself into conventional (low) memory. Normally, PC-Cache uses high memory if available.
/MINI	Reduces the resident size (the amount of conventional memory PC-Cache uses to load into) by 2K to 4K, depending upon the size of the cache. This option produces a small performance penalty. This does not change the size of the data cache, however.
/OK	Used primarily in batch files to suppress the prompt if there is an error preventing PC-Cache from installing. For example, if there isn't enough memory, PC-Cache does not install, but stops and waits for a key. If the command-line syntax is incorrect, this option has no effect.
/NOBATCH	For extended-memory caches only, ensures that only one sector of data will be transferred at a time, even if the cache is greater than 100K (which would normally transfer eight sectors of data at a time). This option is sometimes necessary for use with communication software.
/PAUSE	Pauses at the PC-Cache status display. This is useful if you're starting PC-Cache from your AUTOEXEC.BAT file and you want to see the status display before you proceed.
/QUIET	Disables the status display that appears when the cache loads and when the cache options are changed.
/SIZEXP:*nnnn*	Sets up a cache of *nnnn*K in expanded memory. Minimum size: 32K. Maximum size: 31MB. PC-Cache rounds up to the nearest 16K. ***NOTE*** *If you are using QEMM 6.x and its Stealth option, PC-Cache ignores this option and uses conventional memory for its cache instead.*
/SIZEXT:*nnnn*	Sets up a cache of *nnnn*K in extended memory. Only available on 286-class and higher computers. Minimum size: 32K. Maximum size: 31MB.
/SIZEXTB:*nnnn*	Uses BIOS to access a cache of *nnnn*K in extended memory. Use this option if PC-Cache won't load using /SIZEXT:*nnnn*.
/SIZE:nnn	Sets up a cache of *nnn*K in conventional memory. Minimum size: 16K. Maximum size 99K.

Continued

Option	Description
/WIN	Tells PC-Cache to resize the cache automatically when Windows is started (the resident size doesn't change). The reduction is usually about half the original size. This option does not work if you have a cache in conventional memory.
/WINSIZE:*nnnn*	Tells PC-Cache to resize the cache to this size when you start Windows. Windows uses this memory for its use. When you quit Windows, PC-Cache restores the cache to its normal size. This option does not work if you have a cache in conventional memory.
/WRITE:ON or /WRITE:OFF	Affects all cached drives except those specified differently with the d: option. This option controls whether disk-write operations are cached (see "When Not to Use Write Delay," earlier in this chapter). Some versions of DOS 3.1 will not work with delayed disk writing. If PC-Cache won't load, try including /WRITE:OFF in the PC-Cache command line.

Options to Use While the Cache is Loaded

When PC-Cache is loaded in memory, use the following command syntax at the DOS prompt to change the cache or its behavior.

```
PC-CACHE [d:x][/COMMIT or /FLUSH or /ON or /OFF]
         [/STATUS or /S] [/UNLOAD or /U]
         [/WRITE:ON or /WRITE:OFF] [/TEST][/?] [/VIDEO]
```

Option	Description
/COMMIT	Writes any data to your disk that is waiting for the next write opportunity. You can use this option in a batch file that is executed prior to restarting the computer. This option is useful if you are running a program that restarts your computer (like RAMBoost or the Optimize program in QEMM) and want to make sure all cached information has been written to the hard disk. However, PC-Cache updates your disk quickly enough (within a few seconds) that this command is rarely necessary for non-programmers.

Continued

Option	Description
/FLUSH	Empties the contents of the cache. Normally, this option is not necessary because the cache regularly flushes itself faster than you could enter the command. However, it is useful in batch files between processes. For example, if a batch file includes a command that restarts the system, include PC-CACHE/FLUSH prior to the restart command.
/ON or /OFF	Turns the cache on or off, leaving it resident in memory. The /OFF option flushes the cache. The /ON and /OFF options affect all drives unless specified by a drive letter.
/STATUS or /S	Lists information about the current status of PC-Cache.
/TEST	Runs a benchmark performance test of PC-Cache on the default drive. This option works with any (or no) cache loaded. It is useful to compare the speed of various caching configurations.
/UNLOAD or /U	Removes the cache from memory as long as no other memory-resident programs have been loaded after it.
/WRITE:ON or /WRITE:OFF	Turns the delayed writing feature on and off. The /WRITE:OFF option flushes the cache automatically. The /WRITE:ON and /WRITE:OFF options affect all drives unless specified by a drive letter.
/?	Displays command-line help for PC-Cache options.
/VIDEO	Displays command-line help for PC-Cache video options. These affect the status window only.

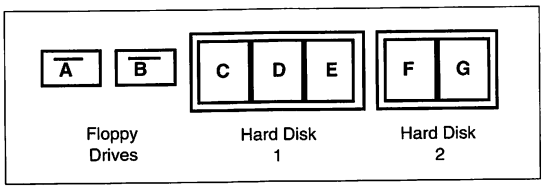
Examples

```
PC-CACHE /SIZEXT:128K
```

This command creates a cache of 128K in extended memory.

```
PC-CACHE /SIZE:64K
```

In the following illustration, this command creates a cache of 64K in conventional memory that read- and write-caches drives C through G, and read-caches A and B.



```
PC-CACHE C:w D:w E:w F:n G:n /SIZE:64K
```

This command creates a cache of 64K in conventional memory that caches the floppy drives (A and B, read-only), the first hard disk (drives C, D, and E in the above illustration, read- and write-cached) but none of the partitions on the second hard disk (drives F and G).

```
PC-CACHE /SIZEXP:512 /QUIET
```

This command creates a cache of 512K in expanded memory and does not display the status when the cache is loaded.

```
PC-CACHE /SIZEXP:128K /WRITE:OFF
```

This command creates a cache of 128K in expanded memory and turns off delayed writing to disk for all drives.

```
PC-CACHE /SIZEXP:128K /WRITE:OFF C:W
```

This command creates a cache of 128K in expanded memory and turns off delayed writing to disk for all drives, except C.

```
PC-CACHE /OK /S
```

This command can be used in a batch file (with the DOS command IF ERRORLEVEL) to check for the presence of PC-Cache. If PC-Cache is loaded in memory, the error is 0. If the PC-Cache is not loaded, the list does not pause.

System Information

SI (System Information) provides useful information about your computer. This information comes in handy if you ever need to call for technical assistance or troubleshoot a problem on your own.

With SI, you can check your hardware configuration and memory, review your AUTOEXEC.BAT and CONFIG.SYS files, compare disk and CPU performance, and get network information.

Here's what you'll find in this chapter:

- **Starting SI** explains how to start SI.
- **View AUTOEXEC.BAT** shows your AUTOEXEC.BAT file so you can troubleshoot your system.
- **View CONFIG.SYS** shows your CONFIG.SYS file so you can determine which drivers are loaded at startup.
- **A description** of each of the SI commands that you use to retrieve information.
- **Command-Line Options** shows the command-line options for SI.

SI can identify and report on networks using Novell NetWare 286 Version 2.10 or later.

If you just want to see a summary of memory usage, you can run Memory Information, or MI. See the *Memory Information* chapter in this part.

Starting SI

▶ Choose **System Information** from the Tools menu in PC Tools Desktop.

or

From DOS, type

`SI` Enter

Starting a Demo of SI

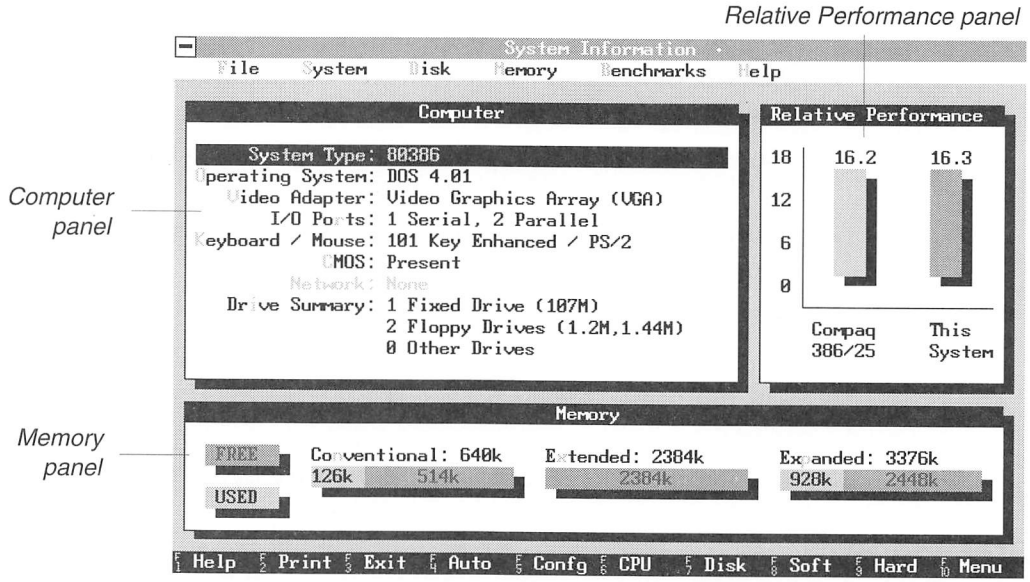
- From DOS, type

  `SI /DEMO` Enter

  The program shows each of several important screens for a few seconds, then goes on to the next screen automatically. To exit the demo, press Esc.

What You See

The SI window contains three panels of summary information about your computer, its relative performance, and its memory use.



Computer panel: Shows information about your computer's operating system, hardware setup, and network.

Relative Performance panel: Shows your computer's CPU speed and that of a comparable computer. Both computers' speed is indexed to that of an IBM PC-XT running at 4.77 Mhz (megahertz or millions of cycles per second). For instance, an index of 2.0 indicates a CPU that is twice as fast as the original PC-XT. The Performance panel cannot be selected using the mouse or keyboard.

Memory panel: Displays the amount of memory free and used for each type of memory installed in your computer.

You can step through the detailed information about each of the items on this screen in turn; or you can display details about a specific item.

Stepping Through the Detailed Information

- Press Enter repeatedly to see each informational dialog box in order. This is a good way to get an overview of what SI has to offer.

Getting Specific Detailed Information

- Press the letter corresponding to a highlighted letter in a panel or a menu.

  For example, to open a dialog box containing more information about your operating system, press O. You can make this selection from the Computer panel or from the System menu.

  or

  Use Tab to select a panel. Use ↑ and ↓ to move the highlight bar to the item, then press Enter.

  or

- Pull down a menu and choose a command.

  or

  Click the item you want more information about.

Function Keys

The following function keys are available in SI:

Function Key	Description
F1 Help	Provides online help.
F2 Print	Prints the system information report.
F3 Exit	Exits from the program.
F4 Auto	Displays the AUTOEXEC.BAT file.
F5 Confg	Displays the CONFIG.SYS file.
F6 CPU	Shows CPU performance.
F7 Disk	Tests disk performance.
F8 Soft	Shows software interrupts.
F9 Hard	Shows hardware interrupts.
F10 Menu	Activates the horizontal menu bar.

View AUTOEXEC.BAT

The commands in the AUTOEXEC.BAT file are executed automatically when you start your computer.

Choose **View AUTOEXEC.BAT** from the File menu or press F4 to

- Determine which TSR (terminate-and-stay-resident) programs are loaded at startup.
- See the order in which TSRs are being loaded. You can eliminate conflicts between TSRs sometimes by changing the loading order.
- See the DOS PATH and SET commands that are being issued at startup. Without the right PATH and SET commands, some applications will not run properly.

View CONFIG.SYS

The CONFIG.SYS file contains the device drivers that load at startup.

Choose **View CONFIG.SYS** from the File menu or press F5 to

- Determine whether the correct device drivers are being loaded.
- Make sure that the right values for FILES and BUFFERS are being set. Without the right values for FILES and BUFFERS, some applications will not run properly.

Print Report

Choose **Print Report** from the File menu or press F2 to generate a report of the system information that you select and send it to a disk file or to a printer.

You can use the report to

- Keep a paper record of your system's configuration for archival purposes.
- Use as a reference when working with a consultant or technical support representative.
- Compare two computer systems.

The report will take a few minutes if you select a report that includes the Disk Speed Test option. If you send the report to disk, SI creates a file called SI.RPT in the current directory.

TIP *If you haven't done so already, print a complete report and keep it for archival purposes in case you should ever need to rebuild your system. Reprint the report every time you change your system.*

System Type

Choose **System Type** from the System menu to

- Confirm the type of CPU (central processing unit) in your computer.
- Detect a math coprocessor.
- Confirm the bus size and type.
- See the BIOS date and ID bytes. Older BIOS versions are sometimes incompatible with certain applications.

BIOS stands for *Basic Input/Output System*—the set of routines stored on a read-only memory (ROM) chip that control functions such as video display, keyboard input, and printer control.

Operating System

Choose **Operating System** from the System menu to

- Determine whether you're using a version of DOS that is compatible with a particular application.
- Identify the manufacturer of the version of DOS you're using. SI recognizes MS-DOS, PC DOS, and Zenith DOS. Other versions of DOS are shown as PC DOS.

Video Adapter

Choose **Video Adapter** from the System menu to

- Identify the display type before installing an application. Many applications require a certain display type and ask you to specify the kind you have during installation. SI recognizes monochrome, CGA, EGA, and VGA adapters.
- Determine which video mode is active. Almost all display adapters have more than one video mode available.
- Determine the character height, maximum scan lines, and whether CGA cursor emulation is on.

- Make sure that your computer has enough video memory to display certain graphics files. For example, some color graphics applications require 512K of video memory to display VGA graphics files.

  SI recognizes any amount of video memory on cards that have the Video 7-chip set or that follow the Video Electronics Standards Association (VESA) convention for Super VGA cards, as well as Paradise, Trident, Genoa, and ATI cards.

I/O Ports

Choose **I/O Ports** from the System menu to see the names and numbers of communications ports installed in your computer, along with each one's base port address. Communications ports are used by peripherals such as printers, mouse devices, and modems. This information helps you to determine whether there are ports available to be used by peripherals.

Keyboard / Mouse

Choose **Keyboard / Mouse** from the System menu to

- Determine what type of keyboard is connected to your computer and to see if there are special keyboard features.
- Determine what type of mouse you're using before you install an application. Many applications that support a mouse ask you to specify the mouse type during installation. SI recognizes the following types of mouse devices: serial, bus, PS/2, InPort, and Hewlett-Packard.
- Make sure that the version numbers of your mouse driver and keyboard type are compatible with a particular application. The mouse driver version number is reported relative to the Microsoft standard. For example, if you have a Logitech Version 4.x mouse driver, SI reports its version number as 6.02, because 6.02 is the Microsoft mouse driver version number that corresponds to Logitech Version 4.x.
- Avoid conflicts between peripherals by knowing the interrupt request line (IRQ) number used by the mouse. It is important to have the IRQ number before you install a new modem or any other peripheral that uses an IRQ. If two pieces of equipment try to use the same IRQ (for example, your mouse and your modem), one or both may fail to work.

CMOS

Choose **CMOS Information** from the System menu to

- Verify the information stored in CMOS about floppy drives, hard drives, and memory installed in your computer. CMOS stands for *complementary metal-oxide semiconductor*. The 286, 386, and 486 computers use a battery-powered CMOS device to store information about the system setup.
- See the results of the CMOS tests performed at system startup.

If your computer does not contain CMOS circuitry, this line contains the word "None" and you cannot select it.

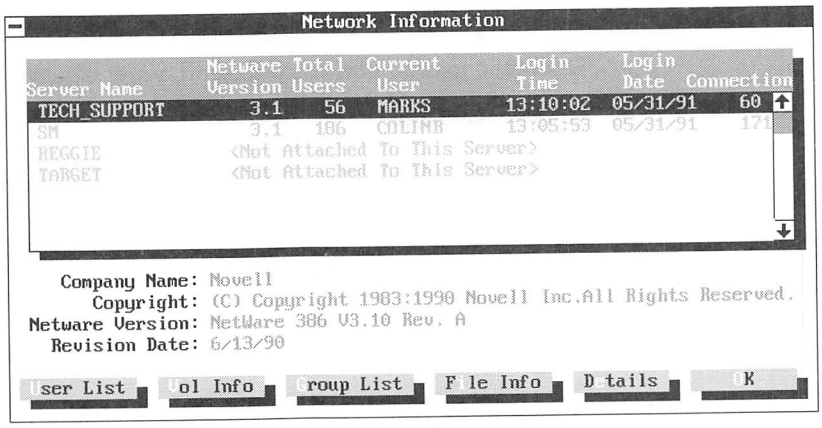
NOTE *The emergency disk can be used to restore damaged CMOS information. See the* Build Emergency Disk *chapter in this part for details.*

Network

Choose **Network** from the System menu to

- Determine whether you're using a network software version that is compatible with a particular application.
- See which servers you are currently connected to or have available to you.
- Find out how many other users are logged in to each server.

The screen shows the name of each network server, your login name, the login time, connection number, and the number of other users who are logged in to each server. The screen also indicates whether you are connected to a Novell network and shows the version and date of the network software. If your system is not attached to a network, this line contains the word "None" and you cannot select it.

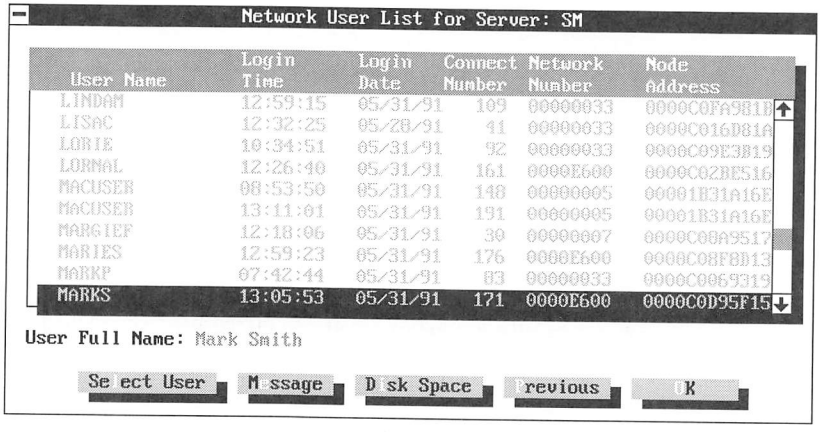


The following options are available by choosing buttons at the bottom of the Network Information dialog box.

User List

Choose **User List** from the Network Information dialog box to

- See who else is logged in to the servers you are attached to.
- Send a brief message to another user.
- See the number of files and directories owned by a user and the amount of disk space they are using.



Sending a Message to Another User

1. Choose **Network** from the System menu or the computer panel.
2. Select a server.
3. Choose **User List**.
4. Select the user(s) you want to send a message to.
5. Choose **Message.**
6. In the Enter Message to Send dialog box, type a message of up to 55 characters.

   The program won't indicate the sender of the message. If you want the recipient to know that you sent it, you must identify yourself in the message.
7. Choose **Send Message.**

   The message is sent immediately.

Viewing a User's Disk Space

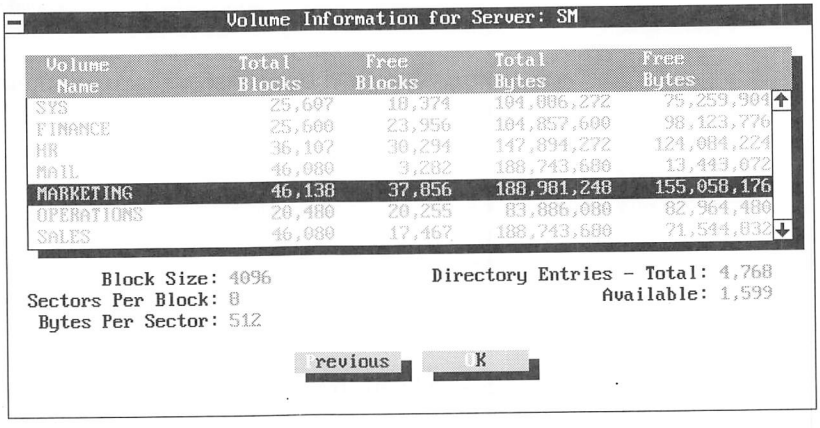
NOTE *You must have at least console operator rights to use this option.*

1. Choose **Network** from the System menu or the computer panel.
2. Select a server.
3. Choose **User List**.
4. Select the user(s) whose disk space usage you want to see.
5. Choose **Disk Space**.

   The program checks the selected server for all files and directories that the selected user owns. This process may take a minute or more.
6. When you're finished looking at the usage display for disk space, choose **OK**.

Vol Info

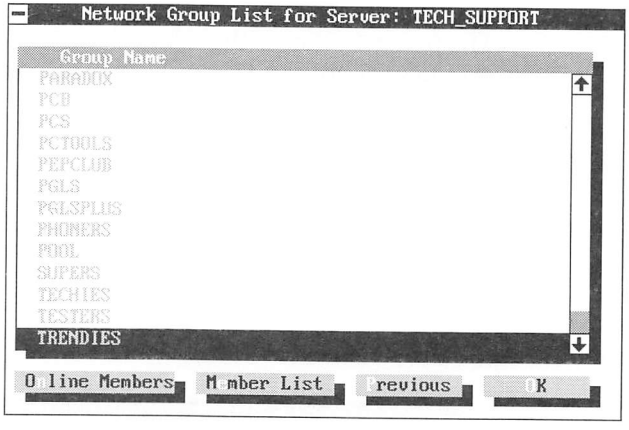
Choose **Vol Info** from the Network Information dialog box before transferring files to network volumes to see a list of volume names, total and free blocks, and total and free bytes.



Group List

Choose **Group List** from the Network Information dialog box to

- See which groups are available on the network.
- See which group members are currently logged in.
- Send brief messages to other users. See "Sending a Message to Another User" earlier in this chapter for instructions.



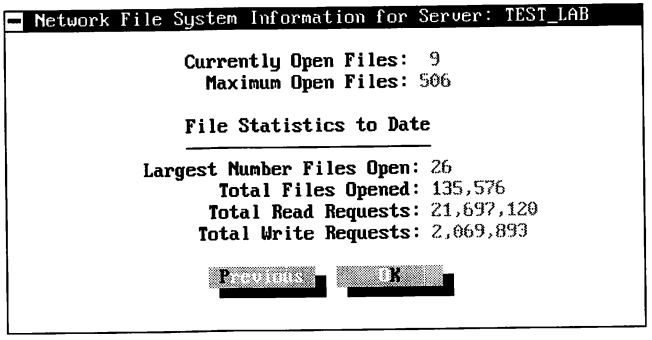
For each group, you can choose to see a list of all members, or just members who are currently logged in.

File Info

Choose **File Info** from the Network Information dialog box to see information about open files and file usage for a particular server. You might want to do this before you perform a file-intensive operation such as backing up the server.

The program also keeps track of statistics about file usage since the last time the server was brought up.

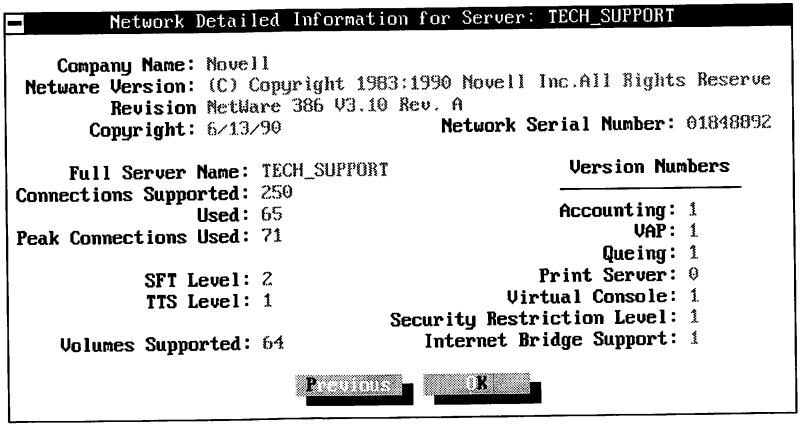
NOTE *This option is only available for servers that are running NetWare 286. Also, you must have at least console operator rights to use this option.*



Details

Choose **Details** from the Network Information dialog box to

- See detailed information about the network software and the server volumes.
- Troubleshoot network problems.
- Determine whether the network software version is compatible with other applications.



Software Interrupts

Choose **Software Interrupts** from the System menu or press F8 to

- See the address, name, and owner of all software interrupts.
- To troubleshoot software conflicts.

Hardware Interrupts

Choose **Hardware Interrupts** from the System menu or press F9 to

- See the address, name, and owner of all hardware interrupts.
- Troubleshoot hardware conflicts.

Drive Summary

Choose **Drive Summary** from the Disk menu

- To see a summary of all types and sizes of drives on your system, including hard drives, floppy drives, logical disk partitions, and network drives. The current default directory for each is also shown.
- To see the current default directory for each drive.

Disk Details

Choose **Disk Details** from the Disk menu to see how much space is available on each hard drive before installing an application.

The Logical Drive Detailed Information dialog box contains specific descriptions of the drives and their starting and total numbers of sectors.

You can see details for another drive by selecting it from the scrollable list at the right-hand side of the dialog box.

Physical Details

Choose **Physical Details** in the Logical Drive Detailed Information dialog box to see the size, number of heads, tracks, and sectors per track for the currently selected hard disk.

This option is not available for floppy drives or network drives.

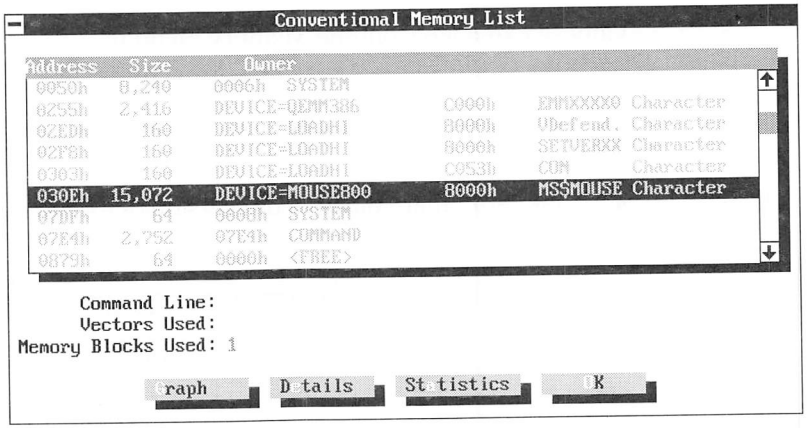
Conventional Memory

Choose **Conventional** from the Memory menu to see a graphic representation of how much conventional memory DOS, memory-resident programs, and user-installed device drivers use, and how much is available for use by applications.

List

Choose **List** in the Conventional Memory Information dialog box to

- See a text list of address space used by DOS, each memory-resident programs, and user-installed device drivers.
- See the command-line options with which each memory-resident program was loaded.
- Use the path information to identify which copy of a memory-resident program is actually being loaded, if you have more than one copy on your hard drive.
- Troubleshoot conflicts between memory-resident programs using the information about hooked vectors.



Information for the highlighted program includes the interrupt vectors that it controls. A vector points to a memory block. The last program to grab a particular interrupt will be the only one with that interrupt listed as controlled or "hooked." The other programs depend on the last program to pass them the interrupt vector when it's finished with it.

Choose **Graph** to return to the Conventional Memory Information dialog box.

Details

In either the Conventional Memory Information dialog box or the Conventional Memory List dialog box, you can choose **Details** to see the following additional information: DOS device drivers and blocks that are reserved for use by applications.

Statistics

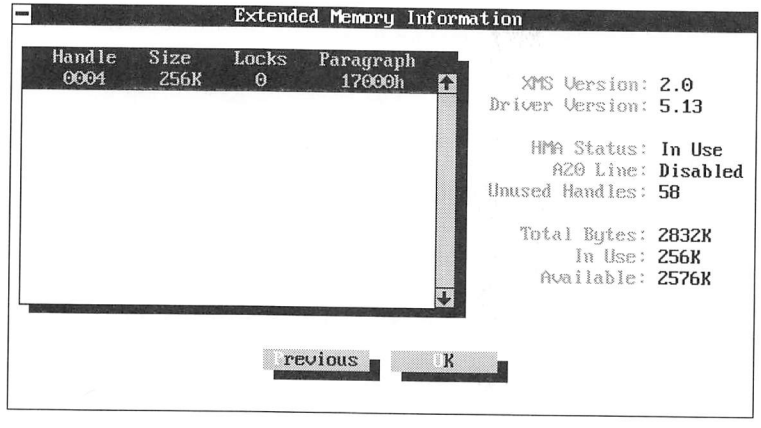
In either the Conventional Memory Information dialog box or the Conventional Memory List dialog box, you can choose **Statistics** to see the amount of conventional memory installed, the amount free, and the largest block of free conventional memory.

If high memory (memory between 640K and 1M) is available, this command shows the amount free, the largest block of free high memory, and the names and version numbers of the UMB (upper memory block) provider and manager. (The UMB provider makes high memory available; the UMB manager gives applications access to it.) SI recognizes QEMM, 386MAX, and MS-DOS Version 5's EMM386 as UMB providers.

Extended Memory

Choose **Extended** from the Memory menu to

- See if extended memory, above 1024K (one megabyte), is installed.
- Determine how much extended memory is available for applications that can use it.
- Make sure that you have the version of extended memory manager required by your application.



The program displays the version of the extended memory driver, if the driver is present; otherwise it gives extended memory statistics based on BIOS information. It also includes how much extended memory is available and whether the High Memory Area (HMA) exists. The HMA is the 64K portion of extended memory starting at 1024K. Extended memory is managed by an XMS driver such as HIMEM.SYS or QEMM.SYS.

Expanded Memory

Choose **Expanded** from the Memory menu to

- See what kind of expanded memory you have (EMS 3.2 or EMS 4.0), if any.
- Determine how much expanded memory is available for applications that can use it.
- Make sure that you have the expanded memory manager version required by your application.

You can add expanded memory to any computer by installing a memory card or special software (called a *memory manager*) that maps a 64K-page frame into the first megabyte of address space.

Expanded memory works by "tricking" DOS into thinking that memory outside the 1MB limit is located at addresses within the 1MB limit. The memory manager allocates 64K in the form of four 16K pages. With the help of the memory manager, these pages are swapped in and out of the processor's address space.

Device Drivers

Device drivers control such things as your mouse, monitor, or disk drive.

Choose **Device Drivers** from the Memory menu to determine

- How much memory is being allocated to device drivers.
- What version of a device driver you are using.

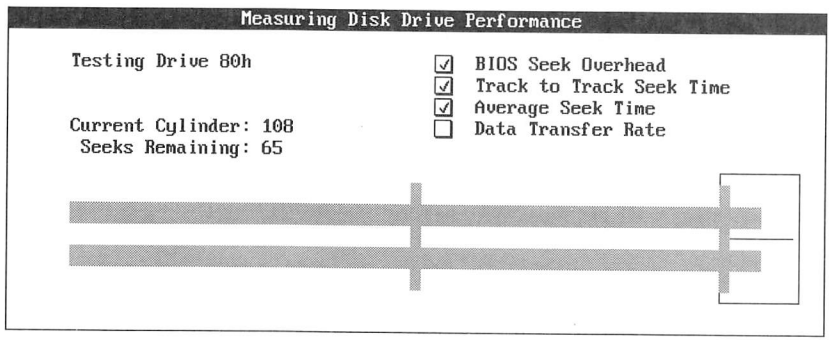
CPU Speed Test

Choose **CPU Speed Test** from the Benchmarks menu or press F6 to measure your computer's CPU speed against other types of computers. All test results are relative to the 8088-based IBM PC-XT (with the XT as 1.0). Therefore, a rating of 2.0 would indicate your CPU is twice as fast as the original IBM PC-XT.

SI executes a variety of machine instructions representative of normal applications to generate the graph you see in the Relative Performance panel. Because speed tests vary, the reported relative speed may differ slightly from other applications that attempt to measure the CPU processing speed.

Disk Speed Test

Choose **Disk Speed Test** from the Benchmarks menu or press F7 to see how your computer's hard drive speed measures against other types of computers.



The screen shows a graphic as the program tests your physical hard disk drive, then a graph comparing your drive to those in other popular PCs.

SI detects up to two hard disks. If you have more than one connected, it lets you choose which drive to test.

TIP *Using PC-Cache to cache your disk will improve its performance greatly, although that performance improvement won't be reflected by the Disk Speed Test. If your disk's interleave can be corrected using the Revitalize a Disk option of DiskFix, that will also improve the data transfer rate. However, you cannot use Revitalize a Disk on all hard disks. See the* DiskFix *chapter in this part for more information.*

Overall Performance

Choose **Overall Performance** from the Benchmarks menu to measure your computer's overall speed against other types of computers.

A visual graph displays a computation of the CPU-speed index combined with the disk-speed index.

If you have already tested your hard disk, then SI computes the Overall Performance immediately; otherwise, the program takes a few moments to perform the disk speed test before computing the overall performance.

SI detects up to two hard disks. If you have more than one connected, it lets you choose which drive to test.

Network Performance

Choose **Network Performance** from the Benchmarks menu to assess the speed of your network at a particular time. For example, you might use this command during a network-intensive operation to determine its effect on network performance.

The Relative Network Performance display uses a bar graph to show the relative speed of I/O operations on a network. The bars show read, write, and overall access to the server in kilobytes per second.

If your network drive is divided into volumes, you can check the performance of any volume for which you have read and write privileges. (The program checks your privileges in the current directory on the volume. You may need to leave SI and change to a directory where you have read and write privileges before you can test volume performance.)

Command-Line Options

Use the following command syntax in a batch file or at the DOS prompt:

```
SI  [/MEM] [/RPT] [/DEMO] [/NOVID] [/?] [/VIDEO]
```

There are additional command-line options that you can use to control program display and mouse operation. See the *Global PC Tools Command-Line Options* chapter in *Part 4 General Reference* or type `SI /VIDEO`.

Option	Description
`/MEM`	Displays he Conventional Memory Information dialog box.
`/RPT`	Prints full system information report to the file SI.RPT.
`/DEMO`	Cycles through several of the most important SI dialog boxes.
`/NOVID`	Disables extended video checking.
`/?`	Displays command-line help for SI options.
`/VIDEO`	Displays command-line help for SI program display and mouse options.

Memory Information

MI (Memory Information) displays a summary of your computer's memory usage. MI can show you how much conventional memory is currently in use and how much is available for use by applications. Use MI to see how much space each TSR and device driver takes up in memory. MI also shows how much and what kind of expanded or extended memory is available for applications that can use it.

Here's what you'll find in this chapter:

- **Starting MI** explains how to start the program.
- **Setting an Environmental Variable** explains how to use MI with specified options.
- **Command-Line Options** describes command-line options for MI.

Starting MI

▶ Choose **Maps ➤ Memory Info** from the Tools menu in PC Tools Desktop.

or

From DOS, type

`MI` Enter

An onscreen report shows the memory address and total bytes used for programs that are loaded into memory.

For additional options to use with MI, see "Command-Line Options" later in this chapter.

Setting an Environment Variable

You can set an environmental variable for Memory Information so that specified options take effect whenever you type `MI`.

To set an option, use the following syntax at the DOS prompt or in your AUTOEXEC.BAT file:

```
SET MI*OPT=options
```

For example, to view a quick summary of memory information whenever you run MI:

- From DOS, type:

  MI*OPT /Q Enter

This sets the /Q or Quick option. Now, whenever you type MI, you will see the quick summary display.

Once you set an option, it remains in effect until you change it. You can view the standard MI screen and ignore the environment variable setting this way:

- From DOS, type:

  MI /E Enter

Command-Line Options

You can configure MI to display memory information different ways using the following options at the DOS prompt:

```
MI [/A] [/C] [/D] [/E] [/F] [/H] [/N] [/O] [/Q] [/V]  [/?]
```

Option	Description
/A	Shows all conventional memory blocks.
/C	Shows conventional memory information, ignoring extended and expanded memory.
/D	Displays device drivers installed and their attribute information.
/E	Ignores the previously set environment variable SET MI*OPT=*options*. ***NOTE*** *The MI*OPT= environment variable can include multiple MI options, except for /E.*
/F	Filters out unprintable characters.
/H	Lists extended and expanded memory handles.
/N	Does not pause when a full screen is displayed.
/O	Alternate display format.
/Q	Provides a quick summary—does not show information about individual TSRs.
/V	Shows hooked vectors for the memory blocks listed. A hooked vector is the interrupt that the device or TSR is occupying.
/?	Displays command-line help for MI options.

RAMBoost

RAMBoost increases your PC's available conventional memory and reduces the complexity of using PC memory management software. When you install RAMBoost, it analyzes your PC's configuration and automatically configures programs to load above 640K after rebooting the system. There is no need to edit your CONFIG.SYS or AUTOEXEC.BAT files manually and these files are not cluttered with LOADHIGH or DEVICEHIGH statements. When you add or remove items from the CONFIG.SYS or AUTOEXEC.BAT files, RAMBoost reboots the PC and automatically rearranges the new configuration to load programs in upper memory.

Here's what you'll find in this chapter:

- **How RAMBoost Works** provides an overview of how RAMBoost works and lists what you need to run RAMBoost.
- **Configuring RAMBoost** details the procedures for activating and using RAMBoost with different memory managers.
- **Using Advanced Features** details the instructions you can use to customize the way RAMBoost uses the upper memory blocks.
- **Command-Line Options** lists the options you can specify when loading RAMBoost.
- **Memory Management Reference** explains how to configure your PC for the best possible use of upper memory, and contains detailed information on upper memory management.
- **Helpful Hints** provides tips on specific compatibility issues with Microsoft Windows 3.x, MS-DOS 5.0, and FASTOPEN. Information on how to configure the hardware in your system to minimize memory fragmentation is also included.

How RAMBoost Works

RAMBoost manages the area of memory in your PC from 640K to 1024K, called *upper memory blocks* (UMBs). RAMBoost runs invisibly on your PC, optimizing available memory automatically each time your PC's system configuration changes. If you add or remove programs from your CONFIG.SYS or AUTOEXEC.BAT files, RAMBoost automatically detects the change, reboots the system, and rearranges the remaining drivers in upper memory.

On a PC using DOS, applications (databases, for example) must run in conventional memory, the first 640K of memory in your computer. Because memory-resident programs, such as PC-Cache, device drivers, and DOS itself normally use this memory also, you may not have enough available memory for your applications.

RAMBoost works in conjunction with a memory manager. The memory manager, such as EMM386, QEMM, or 386MAX, makes the open areas in your upper memory blocks available for loading memory-resident programs and device drivers (referred to as *loading high*). This makes conventional memory available for your applications.

The amount of upper memory RAMBoost makes available is determined by the expanded memory specification (EMS) manager used with it. For example, if you use QEMM with Stealth, the upper limit is approximately 225K. If you use MS-DOS 5.0's EMM386, the upper limit varies from 64K to 160K, depending on the BIOS, peripherals, and the careful use of INCLUDE statements.

Because the open space in upper memory is usually in several pieces of different sizes, programs may fit in some areas, but not in others. RAMBoost arranges your memory-resident programs, device drivers, and other DOS resources such as those specified in the CONFIG.SYS files (for example, FILES=, BUFFERS=) into upper memory. This increases the amount of memory available for DOS to run applications. RAMBoost does this by creating a profile of your memory usage, and automatically rearranging the programs in your upper memory blocks to give you the maximum amount of free conventional memory.

You configure RAMBoost once. Then, each time you start your PC, RAMBoost analyzes your PC's resident programs and device drivers, selects the optimal loading configuration, and loads them into upper memory blocks.

If you are familiar with memory-management techniques, you can customize RAMBoost's performance by manually editing the settings in the RAMBOOST.INI file. RAMBoost detects software that might cause incompatibilities when loaded high. In some cases, you may gain more conventional memory by manually shifting the position of the memory manager in the CONFIG.SYS file, however, this is generally not necessary. RAMBoost is as invisible to you as possible.

The RAMBOOST.INI file can also be edited to force "problem drivers" to load into conventional memory. See "The RAMBoost Configuration File" in the "Using Advanced Features" section in this chapter for details.

RAMBoost Requirements

RAMBoost is flexible. It works with the following operating systems and memory managers:

- A minimum of 1MB random access memory (RAM).
- A 80386 or 80486 processor.
- MS-DOS Version 3.3 or higher, or DR DOS Version 6.
- For Upper Memory Block support, at least 640K and an EEMS/EMS 4.0 memory manager are required. Use one of the following EEMS/EMS 4.0 memory managers:
  - HIMEM.SYS and EMM386.EXE provided with DOS 5.0 or Windows 3.x
  - Quarterdeck QEMM-386™
  - Qualitas 386MAX™ and BlueMAX™
  - Helix Netroom™

Configuring RAMBoost

You use the RAMSETUP.EXE program to configure RAMBoost. When loaded, RAMBoost automatically checks for the existence of HIMEM.SYS, EMM386.EXE, or for the DR DOS HIDOS.SYS and EMM386.SYS on your system. Then it scans upper memory to configure itself with the optimal parameters for managing upper memory.

NOTE *If you are using QEMM386, 386MAX, or Netroom, you must install it according to its installation instructions before you activate RAMBoost. You must also make sure it provides upper memory blocks (UMBs). For more information, see "Compatibility with Memory Managers" later in this chapter.*

1. Choose **Startup Programs** from the Configure menu in PC Tools Desktop, then select the **RAMBoost** option from the window that appears.

   or

   Choose **Startup Programs** in PC Config, then select the **RAMBoost** option from the window that appears.

   or

   From DOS, type:

   RAMSETUP Enter

2. Follow the instructions on the screen.

   If RAMSETUP detects that you have the DOS 5.0 or Windows 3.x memory manager installed, RAMSETUP installs RAMBoost in your CONFIG.SYS file. You have the option of reconfiguring the DOS 5.0 memory manager to its base settings, or modifying your PC's upper memory blocks. For more information on modifying upper memory blocks, see the "Using Advanced Features" section later in this chapter.

   If RAMSETUP detects that you have installed a memory manager other than the one in DOS 5.0 or Windows 3.x, it installs RAMBoost in your CONFIG.SYS file and possibly modifies your AUTOEXEC.BAT file, removing any LOADHIGH or DEVICEHIGH statements.

   If RAMSETUP detects that you have no memory manager installed, but finds the DOS 5.0 or Windows 3.x memory manager on your PC, RAMSETUP installs RAMBoost and the memory manager in your CONFIG.SYS file.

   If RAMSETUP cannot find a memory manager on your PC, it informs you that you must install one.

   After RAMSETUP installs RAMBoost in your CONFIG.SYS file, a dialog box allows you to reboot your PC or exit. Choose **Reboot** to activate RAMBoost. If you choose **Exit**, RAMBoost is activated the next time you reboot your PC.

   RAMBoost reboots your PC twice, completing its activation. From now on, each time you boot your PC, RAMBoost is loaded and it optimizes memory usage. Whenever you reboot your PC, if RAMBoost determines that one of the system files it tracks has been altered (such as your AUTOEXEC.BAT or CONFIG.SYS files), or some other special condition has changed, RAMBoost automatically enters Learn mode to optimize your PC's new configuration.

   For a detailed discussion of Learn mode, see "RAMBoost's Learn Mode" later in this chapter.

Using Advanced Features

RAMBoost runs by itself with minimal user interaction. It is possible, however, to customize the way RAMBoost uses the upper memory blocks of your PC.

WARNING Use these advanced features only if you are very familiar with upper memory concepts and management.

There are two ways you can work with advanced RAMBoost features:

- Using the Upper Memory Usage Editor.
- Editing the RAMBOOST.INI file directly.

The Upper Memory Usage Editor

The Upper Memory Usage Editor is an advanced feature of RAMSETUP that is available for use with the DOS 5.0 or Windows 3.x memory manager. The Upper Memory Usage Editor allows you to:

- View your current upper memory usage.
- Make changes to your upper memory usage.

You can use the Upper Memory Usage Editor to reserve upper memory blocks for devices that might not identify their upper memory usage during RAMBoost's Learn mode. These devices may be network or special video boards. You can also use the editor to make more upper memory blocks available. For example, if you know of an available region of upper memory blocks that appears unavailable, you can use the editor to change the status of the blocks from *allocated* to *available*.

To start the Upper Memory Usage Editor:

1. Choose **Startup Programs** from the Configure menu in PC Tools Desktop, then select the **RAMBoost** option from the window that appears.

   or

   Choose **Startup Programs** in PC Config, then select the **RAMBoost** option from the window that appears.

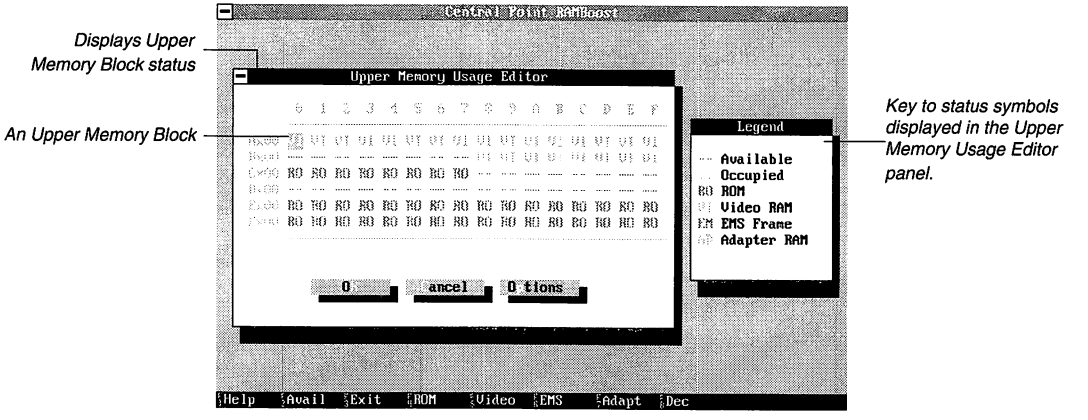
   or

   From DOS, type:

   `RAMSETUP` Enter

If RAMSETUP detects that you have the DOS 5.0 or Windows 3.x memory manager installed, RAMSETUP provides you with an Advanced option button.

2. Choose **Advanced**.



The following table shows status symbols for each block:

This Symbol	Indicates
--	An available memory block.
..	An occupied memory block.
RO	A block allocated for ROM.
VI	A block allocated for video RAM.
EM	A block allocated for the EMS frame.
AD	A block allocated for adapter RAM.

Changing the Current Memory Usage of a Block

1. Select the block you want to change, using the mouse or arrow keys.
2. Choose the function key that corresponds to the type of memory specification you want to apply.

   See the "Function Keys" section following for more information.
3. Repeat steps 1 and 2 until you have modified upper memory to your satisfaction.
4. Choose **OK** to save the changes to your CONFIG.SYS file.

Function Keys

The following table shows the function keys you can use in the Upper Memory Usage Editor:

Function Key	Description
F1 Help	Provides online help.
F2 Avail	Makes the selected memory block(s) available for another use.
F3 Exit	Exits from the program.
F4 ROM	Changes selected memory block usage to ROM.
F5 Video	Changes selected memory block usage to video RAM.
F6 EMS	Changes selected memory block usage to EMS frame.
F7 Adapt	Changes selected memory block usage to RAM adapters.
F8 Dec	Toggles the display of memory block addresses between decimal and hexadecimal characters.

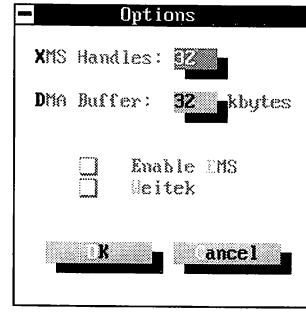
Using the Options Editor

This dialog box lets you set the number of XMS (extended memory specification) handles and the size of your DMA (direct memory access) buffer. The default values are correct for most PCs. You can also enable or disable EMS (expanded memory specification) memory and specify whether your PC is equipped with a Weitek coprocessor.

These options correspond to command-line options for the DOS 5.0 memory manager, EMM386.

Option	Description
XMS Handles	Specifies the number of extended memory handles EMM386 can use, from 2 - 255. If you use many programs simultaneously that use extended memory, you may need to increase this number.
DMA Buffer	Specifies how many kilobytes of memory to reserve for Direct Memory Access (DMA). This should be the largest DMA transfer that occurs while EMM386 is active, and can be from 16 to 256. The default value is optimized to work on most PCs.
Enable EMS	Enables EMM386 to access expanded memory by designating a memory area as a swap page, required for expanded memory orientation. You can enable EMS if a program you use requires it. If you do not need it, you will have more available upper memory if you leave it disabled.
Weitek	Enables support for the Weitek coprocessor. If your PC uses this coprocessor, enable this feature.

1. Choose **Options** from the Upper Memory Usage Editor menu.



2. Make any necessary adjustments and choose **OK** to save your settings.

The RAMBoost Configuration File

The RAMBoost configuration file is an editable ASCII text file. It contains all the necessary parameters for RAMBoost to manage your system. The profile bears the name RAMBOOST.INI. When RAMBoost needs to consult or edit this profile, it searches for it in the

- current directory
- directory from which RAMBoost was executed
- DOS search PATH, (if one exists).

The RAMBOOST.INI file, which has eight sections, is similar to Microsoft Windows' WIN.INI file. Each section begins with a section header, and contains specific assignments relevant to the operation of RAMBoost. The sections are:

- System
- PIF.Advice
- Completion Triggers
- Text
- Learn
- PIF
- Learn.PIF
- Learn.UMB

Each section may contain comments you add, assignments, and blank lines. Comment lines must have a semi-colon as the first character. Assignments take on the form:

```
<tag>=<value>
```

Neither the <tag>, nor the *<value>* are case-sensitive. The following table shows the notational conventions used.

This Symbol	Indicates that the Parameter is
[ ] - Square brackets	Optional
{ } - Braces	Required
< > - Angle brackets	Replacement place holder

The following discussions describe the different sections in detail.

[System]

`backup=<method>`

Advises RAMBoost as to which backup method to use when the RAMBOOST.INI file is altered. The choices are:

Method	Description
`none`	Doesn't save a backup of the file.
`standard`	Names the new file RAMBOOST.INI and the old file RAMBOOST.OLD. This is the default.
`numbered`	Names the new file RAMBOOST.INI and the old file RAMBOOST.*nnn* where *nnn* is the lowest 3-digit number that does not currently exist.

`backupextensions=<extension>`

When a backup copy is made of the RAMBOOST.INI file, the three-letter extension specified by this option is the extension of the backup copy. For example, if the extension is specified as CP8 then RAMBOOST.INI becomes RAMBOOST.CP8.

`limit=<segment>`

RAMBoost measures the size of programs and device drivers during Learn mode. The limit tag restricts RAMBoost's measurement of a program or device driver's load-time memory requirements to a specific segment address in low DOS memory.

`lowfiles=<number>`

Specifies the minimum number of DOS system file handles to be maintained in low DOS memory for compatibility with Windows. This value is calculated by RAMSETUP and is inserted into RAMBOOST.INI at setup time. RAMSETUP uses whichever value is greater: its calculation or the LowFiles assignment in the RAMSETUP.INI file.

`loadquery=<prompt>`

Specifies the level of prompting that RAMBoost provides when loading into memory. The default value is `yesno`.

Valid prompt levels are:

Prompt	Description
`full`	Causes RAMBoost to display three prompts (Y/N/A) when loading. The user selects "Y" to have RAMBoost load, "N" to not have RAMBoost load, and "A" to always load and suppress all prompts until RAMSETUP.EXE is run again.
`yesno`	Causes RAMBoost to display two prompts (Y/N) when loading. The user selects "Y" to have RAMBoost load, "N" to not have RAMBoost load. This is the default.
`none`	Causes RAMBoost to display no prompts. You can still interrupt RAMBoost's loading by holding down Ctrl Alt and both Shift keys prior to its loading.

`mode=<mode>`

Specifies the mode of operation RAMBoost uses when loading into memory. The various modes are:

Option	Description
`learn`	Instructs RAMBoost to install in Learn mode. This is a special mode of operation where RAMBoost watches, rather than assists DOS in executing the CONFIG.SYS and AUTOEXEC.BAT files. When the boot process is complete, RAMBoost writes what it has learned back to the configuration file, disables Learn mode, and reboots the system in its normal operational mode.

Option	Description
active	The normal mode of operation. When RAMBoost is active, it is capable of performing its functions. The optimizer step during setup normally places RAMBoost into Active mode.
enabled	Similar to Active mode, except it will not automatically revert to Learn mode when the configuration changes. Instead, you are is asked whether to revert to Learn mode, or proceed in Active mode.
passive	RAMBoost provides UMB management only.
disabled	Prevents RAMBoost from installing itself in memory. If a MODE command is not found in the [System] section of the RAMBoost profile, then RAMBoost is disabled.

`optimizerui=<filename> [<arguments>]`

`ouiminmem=<kbytes>`

The values for these options are set by RAMBoost and should not be modified.

`option=<option>`

These options enable or disable a particular RAMBoost feature. The options are:

Option	Description
hma	On 386 or 486 PCs that are not running an XMS manager with HMA support, such as HIMEM.SYS, this option requests that RAMBoost provide HMA support. For more information on HMA, see "Comparison of Memory Types" in the "Memory Management Reference" section later in this chapter.
umb	By default, RAMBoost manages upper memory blocks. Enable this feature to have DOS manage these blocks.
binddevices	This option is set by RAMBoost when it discovers that a new device, such as a CD-ROM, has been added to the system.

Continued

Option	Description
display	Enables RAMBoost Mode display when you start your PC so that when you reboot your PC, you see RAMBoost's current mode displayed in text on your screen.
noframe	Disables the EMS page frame on LIM 3.2, LIM 4.0, and EEMS boards and drivers. This allows the 64K-page frame and any additional pages to be mapped as UMBs for use by RAMBoost. No EMS memory is addressable while this option is invoked.
nohighalloc	Prevents DOS allocations from Upper Memory Blocks (UMB) by UMB-loaded programs.
nosmartframe	Disables the RAMBoost default of SMARTFRAME. Tells RAMBoost not to use the EMS page frame to assist in loading programs into high memory. RAMBoost may also implicitly disable SMARTFRAME if it determines that using SMARTFRAME is not safe.
nosmartdma	Disables the SmartDMA feature (default). SmartDMA automatically allocates a single sector in the low memory buffer for some PC and XT DMA controllers.
nosmarthddma	Disables the Smart Hard Disk DMA feature (default).
quiet	Disables the DOS table relocation messages. For more information on DOS tables, see "Upper Memory Block Use" in the "Memory Management Reference" section later in this chapter.
smartstack	Instructs RAMBoost to correct a CTRL-ALT-DEL problem that may occur with DOS 5.0's EMM386.EXE driver, or other 386 control programs.
smartdma	Protects transfers to and from floppy disks. By default this option is set ON if all of these conditions are true: RAMBoost platform is 386, UMB, or EMS; CPU type is 386SX, 386DX, or 486; and Virtual DMA Spec. (VDS) API is not installed.
smarthddma	Use when you have a hard drive that uses DMA. This is only valid when the Option SMARTDMA is in effect. This option is needed only on 386 or 486 PCs with SCSI or ESDI hard-drive controllers, which use DMA for hard-disk transfers (MFM or RLL hard-drive controllers use programmed I/O for hard-disk transfers).

Option	Description
smartframe	Enables the SmartFrame if possible (default). SmartFrame temporarily borrows the EMS page frame for loading programs and device drivers.
recover	Attempts to run the setup program when RAMBoost fails to load.
test	Performs a complete memory test on all DOS= and UMB= memory ranges.
verbose	Enables full DOS table relocation messages, allowing you to see RAMBoost's status while it relocates the DOS tables. For more information on DOS tables, see "Upper Memory Block Use" in the "Memory Management Reference" section in this chapter.

`reset=<reset_mode>`

Specifies the mode by which RAMBoost will reset the processor when required. The options are:

Mode	Description
cold	Performs a cold reboot (default).
hard	Performs a hard reboot by pulling the processor reset pin low.
warm	Performs a warm reboot.
fast	Performs a reboot using interrupt 19h.

`resetdelay=<seconds>`

Advises RAMBoost to wait *<seconds>* number of seconds before resetting the computer. The default is 0 seconds (no delay). It may be necessary to use a non-zero value to allow some time for disk-caching programs with delayed write options to flush their buffers to disk before the processor is reset.

NOTE *RAMBoost attempts to advise disk caches of an impending reset by issuing the DOS function call to reset (before any delay).*

`setup=<filename.ext>`

Specifies an override of the name of the RAMSETUP program. It is used during startup, when RAMBoost needs to execute its setup program in response to a system problem that requires configuration recovery, such as a corrupted CONFIG.SYS file.

`smartdmabuffersize=<bytes>`

Used in conjunction with the SmartDMA and SmartHDDDMA options. This option overrides the default DMA buffer size. It is activated when either SmartDMA or SmartHDDDMA is enabled. For more information on SmartDMA and SmartHDDDMA, see the system section tab, Option=<smartdma> explanation.

`terminatedelay=<seconds>`

Specifies the number of seconds to wait for an answer to the query "Load RAMBoost [Y/N]," which is issued at startup. When that number of seconds expires, without an answer, RAMBoost continues to load. If the TerminateDelay=0, then the query is not issued.

NOTE *Regardless of the TerminateDelay setting, you can always cause a terminate query to appear at startup by holding down Ctrl, Alt and both Shift keys simultaneously while RAMBoost is loading.*

[PIF.Advice]

`<filename.ext>={low|high}[=<segment>][, locked]`

These assignments are PIF (Program Information) assignments. PIFs record the name, size of each program or device driver, and a HIGH or LOW destination. These PIFs partially override information found in matching PIFs in the [PIF.Learn] section or in Learn mode collected data. If you specify HIGH with no ** specification, the PIF modifies a partial PIF it matches, and becomes subject to optimization. If you specify ** in conjunction with HIGH, then RAMBoost attempts to load the program or device driver at or above the specified ** address.

[CompletionTriggers]

`shell=<filename.ext>[, size=<size>]`

RAMBoost builds a list of file names from 0 or more *shell=* assignments in this section when starting a Learn-mode pass. During this pass, RAMBoost compares the file name associated with every program execution against each file name in the list. When a match occurs, RAMBoost optionally compares the size of the file to the size recorded in the list, (if present) to verify the match. RAMBoost terminates Learn mode on the first confirmed match, and immediately invokes RAMBoost active.

[Text]

These assignments work in conjunction with the *option=display* from the [System] section. This allows you to configure the text that will appear in the RAMBoost Mode Display Tag. These strings are truncated at 29 characters, and will be displayed entirely in uppercase. The following examples show text-string assignments that RAMBoost recognizes.

`learntext=<text>`

Replaces default text for Learn mode indicator. The default indicator is *Learn*.

`activetext=<text>`

Replaces default text for Active mode indicator. The default is *Active*.

[Learn]

RAMBoost uses the [Learn] section of its profile to keep information that controls the Learn mode operations. The information kept here is not important to users.

When RAMBoost optimizes memory, it collects certain data about the system at that time and records them in this section. Should any part of this data change, RAMBoost reverts from Active to Learn mode automatically. This data is inspected and compared to existing conditions when RAMBoost is loaded.

The assignments are:

Assignment	Description
`ASIG=timestamp`	Time stamp on AUTOEXEC.BAT.
`CSIG=timestamp`	Time stamp on CONFIG.SYS.
`PSIG=timestamp`	Time stamp on RAMBOOST.INI.
`DSIG=DOS info`	DOS version and OEM name.
`BSIG=d:`	Boot drive letter.
`FSIG=serial #`	Boot drive serial # (DOS + 4).

NOTE *These tags are only modified under the control of RAMBoost and are presented for explanatory purposes only.*

RAMBoost writes these signatures after it optimizes memory successfully. When starting in Active mode, RAMBoost reads each signature and compares these values to the current values in the system. If any signature is different, RAMBoost reverts to Learn mode automatically. During startup when MODE=ENABLED, RAMBoost performs the same tests, however, if a change has occurred, RAMBoost only recommends reverting to Learn mode to query you.

If a signature does not exist in the file, the corresponding check is not performed. There may be 0 or more *xsig* assignments. These assignments are created and deleted by the RAMBoost Track utility, which allows you to configure RAMBoost to track extra configuration files.

`option=<option>`

RAMBoost observes some [Learn] options. The options are:

Option	Description
`keepinfo`	When RAMBoost is invoked at the end of a Learn mode, this option causes RAMBoost to write its collected data to the file. Enables RAMBoost to perform offline optimizations later, based on that data. RAMBoost writes this data to the [Learn.PIF] and [Learn.UMB] sections, which are described further in this chapter.
`noabortreset`	Normally, RAMBoost attempts to reset the computer when activated by the completion of Learn mode (online optimization). This option prevents RAMBoost from resetting the computer when the process is terminated prematurely by operator intervention.

`optdelay=<seconds>`

Causes RAMBoost to wait *<seconds>* number of seconds after completion of an optimization before exiting from or resetting the system. The default is 0.

`optmethod=<method>`

Advises RAMBoost as to which optimization method to use. The *<method>* is a variable number that has the following meaning:

Number	Description
0	Requires RAMBoost to choose either the detailed method (1) or the quick method (2), based on overall upper memory requirements, and the amount of upper memory available. This is the default.
1	Forces RAMBoost to always perform a detailed (1-pass) optimization. This method is the most precise, however, it can be time-consuming sometimes.
2	Forces RAMBoost to always perform a quick (2-pass) optimization. This method is not as precise as the detailed method, however it is generally much faster.
-1	Similar to method 0, except upon making its decision, RAMBoost allows you to reverse its decision.

`fit=<strategy>`

This assignment alters the order in which RAMBoost attempts to fit programs or device drivers into upper memory. The default is first. In general, this does not affect the operation of RAMBoost. Three strategies are available:

Strategy	Description
FIRST	Use the first fit strategy when allocating Upper Memory Blocks. This option only works when RAMBoost is in Passive mode.
BEST	Allocates from the smallest Upper Memory Block, which satisfies the size of an Upper Memory Block request. This option only works when RAMBoost is in Passive mode.
LAST	Use the last fit strategy when allocating Upper Memory Blocks. This option only works when RAMBoost is in Passive mode.

[PIF]

```
;These are examples of PIF entries

ramboost=      high=D000, need=10256, keep=10256
ramdrive.sys= high=C800, need=6912,  keep=1136,  size=5873
setver.exe=    high=B000, need=14736, keep=400,   size=12007
winox.sys=     high=C800, need=4032,  keep=2784,  size=2998
mouse.sys=     low,       need=56032, keep-17040, size=55007
files=         high=D000, need=1600,  keep=1600
fcbs=          high=D000, need=256,   keep=256
buffers=       high=D000, need=512,   keep=512
drives=        high=D000, need=624,   keep=624
stacks=        high=C800, need=624,   keep=624
stacks=        high=C800, need=2384,  keep=2384
smartdrv.exe= high=DA00, need=44688, keep=26896, size=43609
ipx.com=       high=B000, need=28752, keep=19824, size=27459
netx.com=      high=DA00, need=53728, keep=43872, size=52443
doskey.com=    high=C800, need=7888,  keep=5744,  size=5883
```

This section defines the memory requirements of specific programs and device drivers. Each assignment in this section has the general format:

```
filename.ext=data
```

where *filename.ext* is the name of the program or device driver image file. There must not be a path associated with *filename.ext*.

The data associated with the assignment may contain one or several of the following expressions. Individual expressions are separated by commas and at least one space.

NOTE ***Do not*** *change the order of entries in this section. RAMBoost sequentially processes PIFs . If you change the order of these entries, they may not be matched correctly to their respective programs or device drivers.*

Each PIF may have the following clauses in the assignment, each separated by a comma:

```
low or high[=<segment>]
```

LOW advises RAMBoost not to relocate this program or device driver into upper memory. This is the same as having no PIF match a program or device driver being loaded. HIGH informs RAMBoost that the program or device driver will be loaded into upper memory.

If ** is specified in conjunction with HIGH, then RAMBoost attempts to load the program or device driver at or above the specified ** address.

`need=<bytes>`

Specifies the minimum amount of memory the program needs to load into memory and initialize.

`keep=<bytes>`

Informs RAMBoost about how much initial memory the program or device driver requires, and how much it keeps when it is loaded resident. RAMBoost allocates at least as much memory as the greater of these two values.

`size=<bytes>`

This field is optional. If present, RAMBoost compares the value to the size of the file name that matched the PIF *<tag>*. This provides extra verification that this PIF is to be used with the current program or device driver.

`ems`

Instructs RAMBoost to make the PIF available for SMARTFRAME loading. RAMBoost normally adds this to the PIF command during the Learn process if it determines that the PIF would benefit from SMARTFRAME loading.

`locked`

Prevents RAMBoost from altering a specified existing PIF record. A PIF that is locked low will always be loaded into low memory, while a PIF that is locked high will always be loaded into HIDOS UMB memory. When locking a PIF manually, remember that you must insert a comma and at least one space before the locked command. For example:

```
FILES=LOW, LOCKED
```

is the correct syntax. RAMBoost generates the correct syntax if allowed to add the PIF on its own.

[Learn.PIF]

```
;These are examples of LEARN.PIF entries

ramboost=       high,  need=10256, keep=10256
ramdrive.sys=   high,  need=5888,  keep=1136,  size=5873
setver.exe=     high,  need=13712, keep=400,   size=12007
winox.sys=      high,  need=3008,  keep=2784,  size=2998
mouse.sys=      high,  need=55008, keep=17040, size=55007
files=          high,  need=1600,  keep=1600
fcbs=           high,  need=256,   keep=256
buffers=        high,  need=512,   keep=512
drives=         high,  need=624,   keep=624
stacks=         high,  need=624,   keep=624
stacks=         high,  need=2384,  keep=2384
command.com=    high,  need=48416, keep=5584,  size=47845
smartdrv.exe=   high,  need=43664, keep=26896, size=43609
ipx.com=        high,  need=27728, keep=19824, size=27459
netx.com=       high,  need=52704, keep=43872, size=52443
doskey.com=     high,  need=6864,  keep=5744,  size=5883
```

RAMBoost generates this section when activated by the completion of a Learn-mode pass (online optimization), and when the [Learn] *Option=KeepInfo* is in effect. The assignments generated and placed in this section are *Partial PIF* (Partial Program Information) assignments. These PIFs record the name and size of each program or device driver RAMBoost measured as a candidate for upper memory, along with its initial and final memory requirements.

[Learn.UMB]

```
;These are examples of LEARN.UMB entries

umb=C800-CBFF
umb=D000-D3FF
umb=B000-B7FF
umb=DA00-EFFF
umb=0000-9FFF
```

RAMBoost generates this section when activated by the completion of a Learn-mode pass (online optimization), and when the [Learn] *Option=KeepInfo* is in effect. The assignment is:

umb=<*range*>

Specifies the base segment address and top segment address of an Upper Memory Block, which is available for use by RAMBoost when it starts. The DOS memory arena is also recorded in a *umb* assignment.

Command-Line Options

You can configure how RAMBoost loads into memory, displays information, or monitors a tracked file. A *tracked* file is one that RAMBoost monitors (or tracks) for changes, such as your AUTOEXEC.BAT or CONFIG.SYS files. When you change such a file, RAMBoost optimizes your PC's use of memory on the next reboot.

TIP *To force RAMBoost to stop reading any further in the AUTOEXEC.BAT file, add the command* RAMBOOST COMPLETE *to the file. RAMBoost ignores every change that occurs below this command.*

The RAMBoost command line uses the following syntax:

```
RAMBOOST <option>
```

You can specify any of the following options from DOS:

Option	Description
ACTIVE	Forces RAMBoost to remain fully active and re-optimize memory on the next reboot anytime it detects a change to a tracked file. Active mode is the default mode.
DISABLE	Disables RAMBoost by preventing it from loading.
LEARN	Forces RAMBoost to enter Learn mode the next time you reboot, even if no tracked file has changed.
MODE	Returns a value, indicating RAMBoost's current status as not resident (0), in Active mode (1), or in Learn mode (2).
PIF	Displays any of the network drivers, TSRs, DOS tables, and any other files RAMBoost has loaded into upper memory blocks.
SYNC	Updates the signatures for all tracked files in the RAMBOOST.INI file. Use this when you've made a change to a tracked file, but do not want RAMBoost to relearn and optimize your PC.
TRACK	Displays the names and signatures of the files that RAMBoost currently tracks.

Continued

Option	Description
TRACK *filename*	Specifies a new file to add to the list of tracked files when checking for possible changes that will be made to memory allocation. The three files, AUTOEXEC.BAT, CONFIG.SYS, and RAMBOOST.INI are always tracked.
TRACK *filename* /d	Specifies a file to delete from the list of files to be tracked. The three files, AUTOEXEC.BAT, CONFIG.SYS, and RAMBOOST.INI cannot be deleted.
/?	Displays command-line help on screen. Same as HELP, /HELP, ?, and /?

Examples

The following examples illustrate the use of RAMBoost options:

```
RAMBOOST LEARN
```

Forces RAMBoost to reboot, load in Learn mode, read the current tracked files, and determine current memory usage. Then RAMBoost decides how best to reallocate the memory. RAMBoost saves this information to `RAMBOOST.INI`, then reboots the computer and allocates memory according to the information stored in `RAMBOOST.INI`.

```
RAMBOOST MODE
```

Returns a value in the DOS Errorlevel variable indicating RAMBoost's current mode. The value can be either not resident, active, or learn. The DOS Errorlevel variable is for use in batch files.

```
RAMBOOST TRACK
```

Displays a list of files on the screen that RAMBoost is tracking.

```
RAMBOOST TRACK C:\NET.BAT
```

Adds the C:\NET.BAT file to the list of tracked files.

```
RAMBOOST TRACK C:\NET.BAT /D
```

Removes the C:\NET.BAT file from the list of tracked files.

Memory Management Reference

Compatibility with Memory Managers

The following sections describe RAMBoost's compatibility with Helix Netroom™, Qualitas 386MAX™, Quarterdeck QEMM-386™, and Microsoft Windows 3.x.

Helix Netroom

Netroom should be installed on your machine and operating correctly before installing the RAMBoost software. Once RAMBoost is installed, it loads programs into high memory automatically.

Existing Installations

You should have a command line in the CONFIG.SYS that looks something like this:

```
DEVICE=C:\NETROOM\RM386.STS EMS=C800-EFFF FRAME=NONE
```

This command-line example assumes that you are not using EMS.

New Installations

If you are installing Netroom for the first time, follow the installation instructions in your Netroom manual and install the Netroom software. When installation is finished, you should have a command line in the CONFIG.SYS that looks something like this:

```
DEVICE=C:\NETROOM\RM386.SYS EMS=C800-EFFF  FRAME=NONE
```

This command line example assumes that you are not using EMS.

You are now ready to install RAMBoost.

NOTE *You can override any and all of the RAMBoost features. See "The RAMBoost Configuration File" earlier in this chapter for more information.*

Qualitas 386MAX™ and BLUEMAX™

386MAX and BLUEMAX are similar enough that for the purposes of installing RAMBoost with either one, they can be treated identically. This procedure refers only to 386MAX for clarity.

386MAX should be installed on your machine and operating correctly before installing the RAMBoost software. Once RAMBoost is installed, it loads programs into high memory automatically.

Existing Installations

You should have a command line in the CONFIG.SYS that looks something like this:

```
DEVICE=C:\MAX\386MAX.SYS INCLUDE=B000-B800 EMS=512
```

If EMS is not used or required, change an EMS parameter to read EMS=0 on the 386MAX command line. For example:

```
DEVICE=C:\MAX\386MAX.SYS INCLUDE=B000-B800 EMS=0
```

This change increases the Upper Memory available to RAMBoost by 64K.

New Installations

If you are installing 386MAX for the first time, follow the installation instructions in your 386MAX manual and install the 386MAX software. When installation is complete, you should have a command line in the CONFIG.SYS that looks something like this:

```
DEVICE=C:\MAX\386MAX.SYS INCLUDE=B000-B800 EMS=512
```

If EMS is not used or required, change an EMS parameter to read EMS=0 on the 386MAX command line. For example:

```
DEVICE=C:\MAX\386MAX.SYS INCLUDE=B000-B800 EMS=0
```

This change increases the Upper Memory available to RAMBoost by 64K.

You are now ready to install RAMBoost.

NOTE *You can override any and all of the RAMBoost features. See "The RAMBoost Configuration File" earlier in this chapter for more information.*

Quarterdeck QEMM-386™

QEMM should be installed on your machine and operating correctly before installing the RAMBoost software. Once RAMBoost is installed it loads programs into high memory automatically.

Existing Installations

You should have a command line in your CONFIG.SYS file that looks something like this:

```
DEVICE=C:\QEMM\QEMM386.SYS RAM X=F000-FFFF
```

If EMS is not used or required, add a NOEMS parameter to the QEMM command line. For example:

```
DEVICE=C:\QEMM\QEMM386.SYS RAM X=F000-FFFF NOEMS
```

This change increases the Upper Memory available to RAMBoost by 64K.

New Installations

If you are installing QEMM for the first time, follow the installation instructions in your QEMM manual and install the QEMM software.

If EMS is not used or required, add a NOEMS parameter to the QEMM command line. For example:

```
DEVICE=C:\QEMM\QEMM386.SYS RAM X=F000-FFFF NOEMS
```

This change increases the Upper Memory available to RAMBoost by 64K.

You are now ready to install RAMBoost.

NOTE *You can override any and all of the RAMBoost features. See "The RAMBoost Configuration File" earlier in this chapter for more information.*

The RAMBoost Optimizer

RAMBoost makes its best attempt to provide the maximum DOS memory. The RAMBoost Optimizer determines which of two optimization methods is better for your systems configuration. It is possible that RAMBoost will not pick the best method for your machine. The following options allow you additional control over the optimizer's operation.

```
OPTMETHOD=1
```

Use if the optimizer leaves a high number of programs in low memory, for example, RAMBoost has 128K to work with, but only moves 40K of your 100K network out of DOS. To correct this, edit the RAMBOOST.INI file and add the following command line to the [Learn] section:

Syntax example:

```
[LEARN]

OPTMETHOD=1
```

This forces RAMBoost to re-optimize for maximum precision. Using this method, however, causes the optimizer to be slower during the optimize process. System performance is not affected during normal operations.

```
OPTMETHOD=2
```

If the optimizer takes a long time to optimize the system. For example, RAMBoost has 2 billion combinations to check and is estimating 2 hours or more to complete. To increase the speed of the optimization, edit the RAMBOOST.INI file and add the following command line to the [LEARN] section:

Syntax example:

```
[LEARN]

OPTMETHOD=2
```

This method reduces the estimated 2 hours to approximately 30 seconds. In most cases, this is the default method that RAMBoost uses.

Comparison of Memory Types

The large number of memory "types" available today often causes confusion about which type of additional memory is appropriate for a particular system. The five most common types of memory are described as follows. Refer to "Upper Memory Block Use" in this section for a graphic representation of memory type addressing.

- Conventional DOS Memory

  The 8086 and 80x86 processors, which power personal computers and run the DOS operating system, have a 1024K (1 megabyte) address space when operating in real mode. The lower 640K of this memory is designated as system memory and is called *conventional DOS memory*. This is the memory that DOS uses to open programs, manipulate data, move files, copy, print, and manage overall operation.

- Reserved Memory Area or Upper Memory Block (UMB)

  The upper 384K in the 1MB address space is known as the *Upper Memory Block* and is used by video adapters, network hardware, ROM BIOS, and other memory-mapped hardware. This space, however, is never completely filled. Memory is mapped into this region between 640K and 1MB through the means of an Upper Memory Manager (known as a *platform*). It is used for loading TSRs, DOS tables, and network software to free as much conventional DOS memory as possible. It is these Upper Memory Blocks that are used by RAMBoost to free conventional DOS memory.

- Extended Memory

  Extended memory is addressed above 1024K and cannot be accessed when the processor is in real mode. Therefore, it can't be used by standard programs running under DOS. On 80286 and 80386 machines, some programs, mostly RAM disks and disk-caching programs, switch the processor to protected mode and access this space. Extended memory can never be used on 8088 and 8086 machines because these processors do not support protected mode, or memory above 1MB.

- Expanded Memory, LIM 3.2/4.0 (also known as EMS or EEMS)

  Expanded memory uses a 64K window (of bank-switched memory), typically in the address space between 640K and 1024K. Application programs must be written specifically to switch blocks of memory in and out of this window. The program itself uses DOS memory to function, and only accesses this expanded memory to store data.

- Extended Memory Specification (XMS)

  The XMS method allows DOS programs to make use of the additional extended memory found in 80286, 80386, and 80486 machines in a consistent, machine-independent fashion. XMS/HMA can add almost 64K of memory that some DOS programs can access directly for storing a portion of its code segment; or as XMS/EMA it can provide DOS-extender programs (such as Windows 3.x) with a standard and consistent method for storing data (or inactive code) in extended memory. XMS can provide an interface for any of these memory regions:

Memory Region	Description
Upper Memory Area (UMA)	The reserved memory area between 640K and 1MB. XMS memory in this region is called *Upper Memory Blocks*.
High Memory Area (HMA)	The first 64K minus 16 bytes of extended memory, located just above 1MB. XMS memory in this region is called the *HMA*.
Extended Memory Area (EMA)	The remainder of the extended memory region, from 1MB + 64K and up. XMS memory in this region is called *EMBs*.

Loading Assistance

Device drivers, TSR programs, and DOS tables are collectively known as objects that RAMBoost can free from main memory and relocate. RAMBoost assists DOS in relocating objects into UMB (or HMA) from DOS. RAMBoost monitors all crucial DOS entry points, allowing it to see in great detail what is being loaded. This approach allows RAMBoost to relocate any device driver or TSR, without modification to any line in CONFIG.SYS, AUTOEXEC.BAT, or any batch file called by or chained to your AUTOEXEC.BAT file. It doesn't matter if a TSR or overlay is executed directly or indirectly from another program, such as a network shell. RAMBoost sees it all in exactly the same way DOS does. Even the primary command shell may be relocated, simply and transparently.

DOS Tables

RAMBoost relocates all memory associated with the following DOS tables, which may be specified in CONFIG.SYS:

```
FILES=n
FCBS=n, m
BUFFERS=n
LASTDRIVE=d
STACKS=n
DEVICE=[devicenames]
```

NOTE *DOS 4.0 provides read-ahead buffers and optionally supports buffers in EMS. RAMBoost can relocate all main memory requirements in support of BUFFERS, including read-ahead buffers.*

Expanded Memory Use

When EMS (expanded) memory is available, RAMBoost takes advantage of the page frame when loading objects that require more memory to load and initialize than they keep. If the EMS page frame is adjacent to the top of a free UMB, then the UMB can be temporarily extended to 64K. RAMBoost does this by allocating 64K of EMS memory and mapping to the page frame. An object can then be relocated to that UMB and initialized. The UMB is then shrunk back to its original size, and the page frame is restored to its previous state. RAMBoost uses this technique on any object than can benefit by it safely.

Upper Memory Block Use

As you can see, conventional DOS memory is the most useful type of memory because the application can use it directly. Upper memory use increases the conventional DOS memory available to application programs in two ways:

- DOS Extension

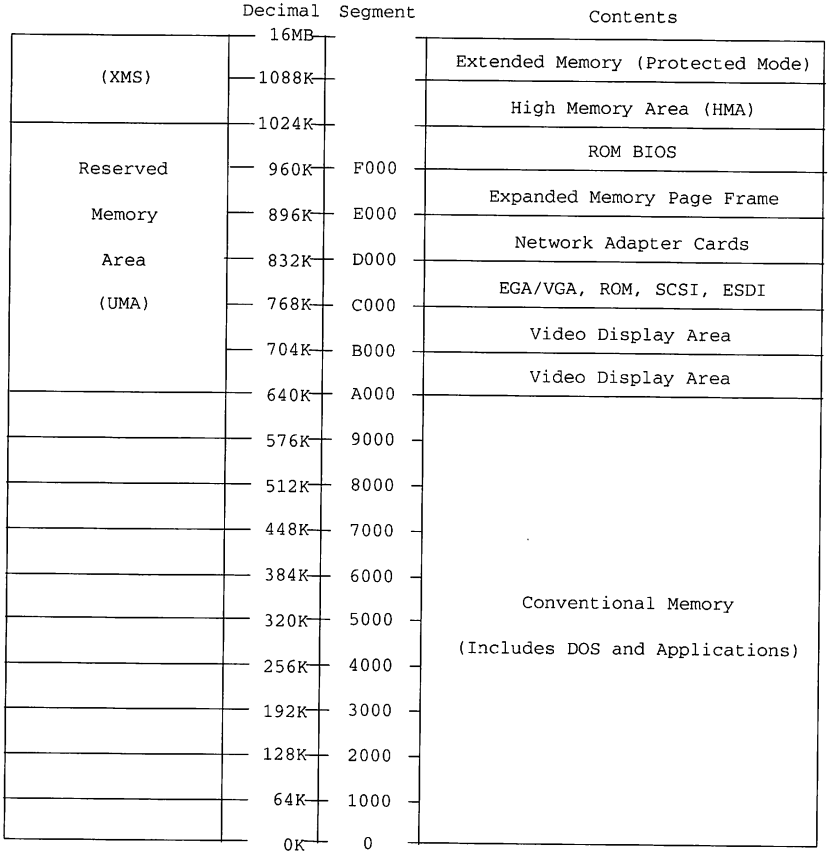
  Any upper memory mapped below the video adapter becomes DOS Extension memory. It is used by application programs directly, without the help of special software. In essence, DOS Extension increases the amount of contiguous DOS memory available to any popular DOS application. The video adapter type determines the amount of DOS Extension memory provided to the system. The table below shows the relationship between popular video adapter types and the amount of DOS memory available after upper memory is installed.

Video Adapter Type	DOS Memory
CGA	736K
Color Hi Res (PGC)	736K
Monochrome	704K
EGA/VGA Graphics Mode	640K
EGA/VGA Text Mode	736K

NOTE *When the EGA/VGA graphics area at A000-ATFF is made available to DOS conventional memory, graphics programs do not run.*

- Load resident software into Upper Memory Blocks

  The memory mapped above the video adapter and below the system BIOS ROM is called *UMB memory*. Terminate-and-stay-resident programs (TSRs), for example device drivers, network software, DOS tables, COMMAND.COM, and TSR utilities (pop-ups), can be executed in UMB memory. When these programs load, instead of using conventional DOS memory, they will be located in UMB memory. The conventional DOS memory that they consumed in the past is now available to application programs.



DOS Memory Map

RAMBoost's Learn Mode

The object of the optimization step is to compute the best arrangement of programs, devices, and DOS tables, so that when CONFIG.SYS and AUTOEXEC.BAT processing is complete, the maximum amount of contiguous free memory is available for DOS applications.

The optimizer is triggered when RAMBoost is in Learn mode, and either a RAMBoost COMPLETE command has been processed, or a DOS prompt has been issued and DOS is asking for console input.

The Optimizer determines the optimal memory location for EVERY object loaded since (and including) RAMBoost was loaded. Since this can sometimes be a long process, RAMBoost provides a progress bar to show its current status.

The gauge indicates the actual percentage of the possible combinations the Optimizer has currently reviewed. The time display indicates the Optimizer's estimate at how much longer the processing may take. This estimate is based entirely on how long it has taken to process the current fraction of the job. The estimate is constantly being updated. The estimate may seem erratic because there are many "shortcuts" which the Optimizer takes but cannot predict.

Once the Optimizer completes its evaluation, it writes information back to the RAMBoost profile. The information written by the Optimizer will later direct RAMBoost in loading each component into the optimal memory location.

Once the Optimizer has written its results back to the RAMBoost profile, it updates the Operating mode in the profile to Active, and reboots the computer.

This time when the processor reboots, RAMBoost loads in Active mode. RAMBoost relocates itself and all programs, devices, and DOS tables, which follow into upper memory, guided by the profile information from the Optimizer.

NOTE *Not everything can fit into upper memory. In these cases, RAMBoost loads certain programs or device drivers into main DOS memory. In all cases, the Optimizer tries to minimize this effect, and maximize the use of upper memory.*

A Guide to What's Where in Reserved Memory

In an IBM-compatible computer, there is 384K of memory that is reserved for hardware expansion. This area is located from 640K to 1MB (1024K). Certain pieces of hardware, video cards, or BIOS ROM's for example, use part of this memory. Some of these devices can be relocated and some cannot be moved. Typically, part of this memory is unused and can be reclaimed for use as DOS memory. RAMBoost works with a memory platform to move DOS programs into this upper memory, as it is known.

For reference, the following list shows devices that use part of this upper memory. This indicates which expansion cards you own are using memory, and how much of this upper memory space each adapter uses. The locations shown in the table below are *typical* areas for each card. These may vary from machine to machine, depending on other expansion cards or on the technician that set up the machine.

The list also provides the hexadecimal addresses used by the device, and the number of kilobytes of memory space this equates to. When a device can be moved, a list of alternate locations is given. When a device cannot be moved, it is marked as unmovable.

BIOS ROM's	Hexadecimal Addresses Used	Kilobytes of Memory Space Used
XT	F800-FFFF or	32K
	FC00-FFFF	16K
286*	F0000-FFFF or	64K
	E000-FFFF	128K
386SX/386DX/486	F000-FFFF	64K
PS/2 Models 25 and 30 (8088 CPU)	F000-FFFF	64K
PS/2 Models 30-286 and up	E000-FFFF	128K

** E000-F000 is usually not available on these machines, even if not used by BIOS ROMs. The 286 machines that use the Chips and Technologies NEAT CHIPSet are an exception to this rule, and the E000-F000 range is typically available.*

Video Cards	Hexadecimal Addresses Used	Kilobytes of Memory Space Used
Monochrome Text (MDA)	B000-B800	32K
Monochrome Graphics (MGA)	B000-B800	32K
Compaq Plasma/monochrome	B800-C000	32K
Hercules Monochrome Graphics (HGC) (Often shows only B000-B800 until switched into a graphics mode by an application)	B000-C000	64K
Hercules Incolor Card	B000-C000	64K
Color Graphics Adapter (CGA)	B800-C000	32K
Enhanced Graphics Adapter (EGA)	A000-B000 B800-C400	112K
Super Enhanced Graphics Adapter (SEGA)	A000-B000 B800-C800	128K
Video Graphics Array (VGA)	A000-B000 B800-C800	128K
Enhanced Video Graphics Array (VGA+)	A000-B000 B800-CC00	144K
AT&T Display Enhanced Video (DEV)	A000-C000	128K
AT&T CGA Double Scan	B800-C000	32K
Professional Graphics Array (PGA)	B800-C000 C600-C800	40K
PGA with EGA (dual monitors)	A000-B000 B800-C400 C600-C800	120K
Professional Graphics Controllers (such as Matrox or Number Nine) (These cards vary in their exact requirements. Consult your Users Guide for the video card for this information.)	B800-C000 C600-C800	40K
PS/2 Monochrome VGA (mode mono)	B000-B800	32K
PS/2 Monochrome VGA (mode co80)	B800-C000	32K

Continued

Video Cards	Hexadecimal Addresses Used	Kilobytes of Memory Space Used
PS/2 Color VGA	A000-B000 B800-C000	96K
Sigma Laserview	B000-C000 D000-E000 (second half can be anywhere from 8000-E000, first half not moveable)	128K
Amdek 1280 (also Taxan)	A000-B000 B800-C000 C400-C600	104K
Wyse 700	A000-B000 B800-C400	112K
Genius display	A000-B000 B800-C800	128K
Cornerstone full-page display	B000-C000 (mono emulation) C800-D000 (no emulation) B000-B800 (if mono registers are clear)	32-64K

Network Hardware	Hexadecimal Addresses Used	Kilobytes of Memory Space Used
Arcnet (generic); Alternates: dependent on card	D000-D400	16K
Ethernet (generic); Alternates: dependent on card.	D000-D400	16K
3Com Tokenlink	No space required*	
3Com Etherlink (3C501)	No space required	
3Com Etherlink II (3C503) Alternates: 16K at C800, CC00, D800, DC00, or disabled	No space required*	
Alloy Slave card (dual segment)	D000-E000	64K
Alloy Slave card (single segment)	D000-E000	64K

Network Hardware	Hexadecimal Addresses Used	Kilobytes of Memory Space Used
AT&T Starlan; Alternates: A000-A200, B000-B200, D000-D200, E000-E200, or F000-F200	C000-C200	8K
Coconet Ethernet; Alternates: Any 8K from 8000-EE00	D000-D200	8K
Data General	D000-D400	16K
DCA 10Net Arcnet (2Mbs)	No space required	
DCA 10Net Ethernet (10Mbs) Alternates: Any 16K from A000-DC00	D800-DC00	16K
DEC Depca card; Alternates: Movable, but not documented.	D000-E000	64K
IBM 3270 Emulation card; Alternates: Any 16K from C800-E000	CC00-D000	16K
IBM Token Ring; Alternates: ROM - Any 16K from 8000-FC00 RAM - Any 16K from 8000-FC00	CC00-D000 D800-DC00	32K
Lantastic	D800-E000	32K
Micom Interlan 5210 Ethernet; Alternates: Any 16K from C000-E000	D000-D400	16K
Novell NE1000	No space required*	
Novell NE2000	No space required*	
SMC Arcnet PC100,PC110; Alternates: C000-C400 only	D000-D400	16K
SMC Arcnet PC120; Alternates: Any 16K from 0000-FFFF	D000-D400	16K
SMC Arcnet PC210; Alternates: Not movable	D000-E000	64K
SMC Arcnet PC220; Alternates: Any 8K from C000-E000	D000-D200	8K
SMC Arcnet PC500; Alternates: Will find and automatically use any empty 16K from A000-F000	Dynamic	16K

Continued

Network Hardware	Hexadecimal Addresses Used	Kilobytes of Memory Space Used
TRW PC2001 Ethernet	D000-E000 (When using TRW software prior to version 4.06) No space required when using TRW software version 4.06 or higher.	64K
Tops Flashcard	No space required	
Ungerman-Bass; Alternates: Any 32K from 8000-FFFF	D800-E000	32K
Western Digital WD8003E; Alternates: Any 8K from A000-E000, can also be set for any 32K from A000-E000	C400-C600	8K

** Some networks may require the optional Shared RAM on the adapter card to be enabled. Banyan Vines, for example, requires the 3Com Etherlink II (3C503) card to enable its RAM (usually 16K from CC00-D000). Check your network manuals for the exact requirements.*

Expanded Memory Cards	Hexadecimal Addresses Used	Kilobytes of Memory Space Used
Generic (EMS, LIM 3.2, LIM 4.0); Alternates: Any 64K from C000-E000 (Includes Intel Above Board, etc.)	D000-E000	64K
AST Rampage (EEMS) or compatibles; Alternates: Any 64K from A000-E000	D000-E000	64K

Hard Disk Controllers	Hexadecimal Addresses Used	Kilobytes of Memory Space Used
MFM	No space required*	
RLL	C800-CC00	16K
IDE	No space required	
SCSI	CC00-D000	16K
ESDI	CC00-D000	16K

** On XT machines, a hard-drive controller always uses memory, usually 8K from C800-CA00.*

Miscellaneous Cards	Hexadecimal Addresses Used	Kilobytes of Memory Space Used
Bus Mouse	No space required	
Serial Mouse	No space required	
Tape Backups	D000-D400*	16K
Scanners	D000-D400	16K

** These cards may use 16K or more, depending on the card. Most do not use any memory. Check your user's manual for the scanner or tape unit for specific information.*

Helpful Hints

Microsoft Windows 3.x Notes

General Notes

RAMBoost is shipped with a single pre-configured option in the RAMBOOST.INI file. This option loads the DOS FILES command into low memory, and locks them there. This allows Windows 3.x to run correctly in Enhanced Mode. Windows will fail to operate if you remove or alter this command. For reference, the command is found in the PIF section of the RAMBOOST.INI and is provided here:

```
FILES=low, locked
```

MS-DOS 5.0 EMM386.EXE and CTRL-ALT-DEL

When using the EMM386.EXE driver under MS-DOS 5.0 to provide a memory platform for RAMBoost, the Ctrl Alt Del function may not work correctly. This will result in the machine hanging rather than rebooting. This is due to the DOS 5.0 protected mode manager not passing the reboot request to RAMBoost, and attempting to reboot the machine itself. There are two options that can be used to correct this problem.

1. Edit your RAMBOOST.INI file and add a command to the [SYSTEM] section, for example:

   ```
   [SYSTEM]

   OPTION=SMARTSTACK
   ```

   This causes RAMBoost to correct the problem.

2. In addition, there is an alternative reboot sequence inside RAMBoost. To access this feature, from DOS type

   `RAMBoost Reset` Enter

   This allows RAMBoost to reboot the machine correctly.

FASTOPEN

FASTOPEN, when loaded with the /X options, performs EMS calls for every DOS function. This EMS activity causes RAMBoost to determine that it is not safe to use the SMARTFRAME for programs which load after FASTOPEN.

Load FASTOPEN as one of the last items in the AUTOEXEC.BAT file so that the SMARTFRAME processor can do its best job. This caveat also applies to RAM disks, disk-caching programs, and other resident software that routinely makes EMS calls. If an extended memory alternative is available rather that EMS, then that alternative is preferred, especially in 386 environments.

Fragmented Memory and Correction Actions

It is much more efficient to create a small number of large UMBs than it is to create a large number of small UMBs. In addition, the RAMBoost optimizer may take a long time to find an optimal arrangement if the number of UMBs is larger than 3 or 4.

The optimization pass may take some time to complete, since in some cases, RAMBoost must consider literally billions of possible alternative combinations. While the optimizer is running, a progress bar reflects the amount of time remaining until completion.

When setting up a system, you should attempt to install your adapters and add-ons in such a way as to

- Maximize the amount of UMB space that is left over
- Minimize the number of individual UMBs to be created
- Maximize the size of each UMB to be created.

Some things, such as BIOS ROMs or video adapters cannot be moved. In this case, you should move other expansion cards to be adjacent to these unmovable devices. This helps reduce the number of UMBs and consolidate the free memory space into larger areas.

This is typically accomplished by changing switch settings or moving a jumper block on your expansion card. The users guide for each of your expansion cards should detail which jumpers or switches to change.

Some general guidelines are:

- Move your network card. These typically reside in an area of memory that split the upper memory region into two or more small blocks. Move it as close to the BIOS ROM as you can, or as close to the video card as you can. This will allow you to create one large block by combining the two or more smaller ones. On systems with a VGA card and color monitor, the section from B000-B800 can often be used to move the video card. This often provides an even larger memory region for RAMBoost to use.
- If you are using an EMS card or driver, decide if you absolutely need it (Lotus 1-2-3 does need it). If you are using Windows in enhanced mode, for example, Windows would prefer to have extended memory instead of expanded. You may be able to claim another 64K for RAMBoost to use, if you do not need EMS, by using the NOFRAME option to disable the EMS page frame and driver. See the "Command-Line Options" section of this chapter for more information.

Some remapping suggestions are:

- IBM Token Ring adapters

  This uses RAM from D800-DC00 and ROM from CC00-D000. This, combined with the video card, usually splits the HIDOS region into four or more pieces. By moving its ROM to B000-B400 and the RAM to B400-B800 on color systems the memory is reorganized into one or two larger blocks. Switches on the card are changed to move ROM, and a parameter is added to either TOKREUI.COM or DXMC0MOD.SYS to move RAM.

NOTE *PS/2 models 50 and newer use the reference disk rather than switches to move the ROM. RYBS supplies a rewritten ADF file for the Token Ring cards that allow more re-mapping options than the IBM supplied ADF file does.*

- Arcnet or Ethernet cards

  These typically use memory from D---=D400, again splitting HIDOS into two or more pieces. By moving this to C800-CC00 on VGA systems, C000-C400 on monochrome systems, or to DC00-E000 on most 286's you gain one large memory block.

NOTE *With networks such as Novell, you may be required to regenerate the network shell. Most network software allows you to add a parameter to one of the drivers to tell the network where you have moved the adapter.*

- Hard drive controllers

  These usually reside from C800-CC00 or CC00-D000. The first (C800-CC00) is already correct if you have a VGA card. Otherwise, they should be mapped to either C800-CC00 or DC00-E000. The 286 machines with monochrome cards work more efficiently using DC00-E000 for the hard drive controller, while XT and 386 machines would work more efficiently using C800-CC00.

NOTE *Remappping a hard-drive controller* ***does not*** *require you to reformat the drive.*

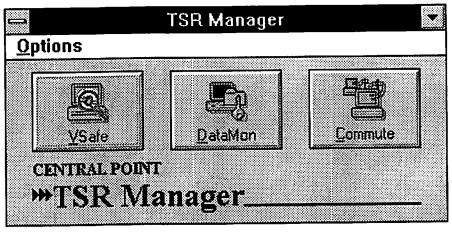
TSR Manager

The TSR Manager is an application that allows Central Point TSRs (Terminate-and-Stay-Resident programs) to communicate when Windows is running. If VWatch, VSafe, Commute or Data Monitor is resident, the TSR Manager intercepts messages they generate and displays them when Windows is running. The TSR Manager also lets you Configure TSRs. If Commute, Data Monitor, or VSafe is resident, you can access each one from Windows to configure program options.

Here's what you'll find in this chapter:

- **Opening the TSR Manager** explains how to open the TSR Manager from the Program Manager in Windows.
- **VSafe or VWatch** explains the VSafe options you can configure while in Windows.
- **Data Monitor** explains the Data Monitor options you can configure while in Windows.
- **Commute** explains the Commute options you can configure while in Windows.
- **TSR Manager Commands** describes the additional TSR Manager commands.
- **Modifying Your WIN.INI File** explains how to modify your WIN.INI file so that the TSR Manager is loaded from Windows.

Install automatically loads the TSR Manager whenever you run Windows. The TSR Manager works only if Central Point programs are resident when you run Windows and displays icon buttons for only those TSRs that are resident:



Opening the TSR Manager

While running Windows, you can open the TSR Manager using one of the following methods:

- Double-click the minimized icon on the desktop.

  or

  Double-click the TSR Manager icon in the PC Tools program group in the Program Manager.

  or

  Press Alt W, choose the PC Tools window, use ↑ ↓ to navigate to the TSR Manager icon, and press Enter.

VSafe or VWatch

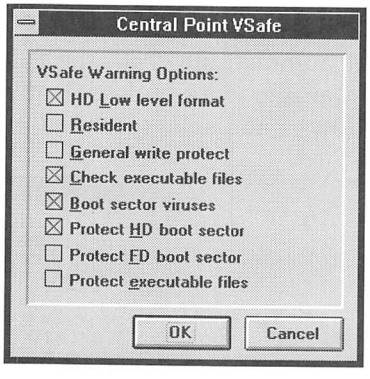
VSafe or VWatch must be resident before you start Windows for the TSR Manager to recognize it.

For information on choosing between VSafe and VWatch, see the *Ongoing Virus Protection* chapter in *Part 1 Central Point Anti-Virus* in Volume 2.

1. Choose **VSafe** or **VWatch**.

   VWatch has no configurable options (other than command-line options), and if you select it, a message tells you that VWatch is monitoring virus activity.

   If you select VSafe, the following window appears:



2. Select any of the VSafe options you need to change for this Windows session.

See "Using VSafe" in *Part 1 Central Point Anti-Virus* in Volume 2 for information about these options.

Changes to VSafe's settings remain in effect until you reboot and your original settings are restored by the AUTOEXEC.BAT statement. To make a change permanent, edit your AUTOEXEC.BAT or configure VSafe from PC Config.

VSafe always checks for viruses and notifies you of suspicious activity in these situations:

- Whenever an infected or changed executable file is run.
- Whenever a program attempts to stay in memory by a method other than standard DOS memory-resident calls.

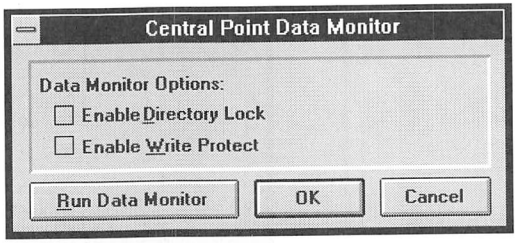
NOTE *Some network drivers install memory-resident without using standard DOS calls, which may generate a VSafe warning message.*

3. Press Esc to exit from the VSafe control window, then choose **Minimize**.

Data Monitor

▶ Choose **DataMon**.

A dialog box similar to the following illustration appears. The **Enable Directory Lock** and **Enable Write Protection** options are dimmed if they were not configured prior to your Windows session. You can choose **Run Data Monitor** to configure them and other Data Monitor options.



Enable Directory Lock: Directory Lock must be configured in Data Monitor to specify the directories to be protected. Once configured, you can turn directory locking on or off with this option. (This has the same effect as typing `DATAMON /DATALOCK-` or `DATAMON /DATALOCK+` at the DOS prompt.) When on, any time an attempt is made to access a protected directory, a dialog box requires you to enter the password before access is permitted.

Enable Write Protection: Prevents crucial data, program, and system files from being deleted, overwritten, or damaged. Once configured, you can turn the protection on or off with this option. (This has the same effect as typing `DATAMON /WRITE-` or `DATAMON /WRITE+` at the DOS prompt.) If **Write Protection** is loaded, a dialog box requires confirmation before you can make changes to a write-protected area of your disk.

Run Data Monitor: Runs Data Monitor in full screen exclusive mode and lets you configure the options in Data Monitor: Disk Light, Screen Blanker, Directory Lock, Write Protection, and Delete Protection. When you are finished, you can save the changes you made and return to Windows. All your selections will be in effect in Windows, with the exception of Disk Light and Screen Blanker, which will take effect when you exit from Windows.

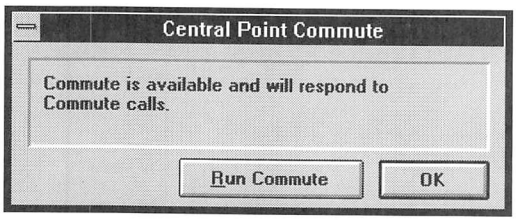
See the *Data Monitor* chapter in this part of the manual for full details on using Data Monitor.

Commute

Commute must be resident before you start Windows for the TSR Manager to recognize it. When a call comes in, your current Windows application is interrupted to handle the call. At this point, you can press Esc to cancel the call and return to the place you were before the interruption.

▶ Choose **Commute**.

The following screen appears:

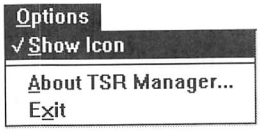


Run Commute: Runs Commute in full-screen exclusive mode, allowing you to configure or use Commute. When you are finished, you have the option to save your changes and return to Windows.

See *Part 3 Commute* in Volume 2 for full details on using Commute.

TSR Manager Commands

The Options menu has the following commands:



Show Icon: Toggles the appearance of the TSR Manager icon on the desktop. When **Show Icon** is off, the TSR Manager icon does not appear while it is running.

About TSR Manager: Gives version information.

Exit: Closes the TSR Manager. The following dialog box appears:

Closing the TSR Manager means that Central Point TSRs won't display messages while Windows is running.

Modifying Your WIN.INI File

WIN.INI is an initialization file that is created when you install Windows. This file has information about how Windows looks and performs. Windows applications use information in the WIN.INI file to configure themselves.

When you used Install to copy and configure PC Tools, your WIN.INI file was modified to automatically load the TSR Manager and the Scheduler for Windows. If you want to make changes to the WIN.INI file yourself, follow this procedure.

WARNING Use care when making changes to any initialization file such as WIN.INI. Incorrect changes to it can lead to unexpected results when you use Windows. Always back up your WIN.INI file before opening it.

1. From the WINDOWS directory, open your WIN.INI file using a text editor.
2. Find the [windows] section of the file. (It should be located near the beginning of the file.)
3. Find the load= line.
   - To uninstall:

     Remove the path name containing WNTSRMAN.EXE to uninstall the TSR Manager and the path name containing WNSCHEDL.EXE to remove the Scheduler.
   - To re-install:

     Add the full path name of WNTSRMAN.EXE to re-install the TSR Manager and the path name containing WNSCHEDL.EXE to re-install the Scheduler. For example,

     ```
     load=c:\pctools\wntsrman.exe
     ```
4. Save the new information, then exit from the text editor.

Task Switcher

Task Switcher is a memory-resident program that allows you to have up to eight DOS programs running at the same time and switch between them.

If you use the Task Switcher along with PC Tools Desktop, Task Switcher controls the programs you run from PC Tools Desktop, allowing you to switch between active programs.

Here's what you'll find in this chapter:

- **Starting Task Switcher** explains how to load Task Switcher in memory and prepare to use it.
- **Adding Programs to Task Switcher** explains how you add programs as tasks to Task Switcher so you can cycle between them.
- **Switching Between Programs** explains how you switch between programs you have added as tasks.
- **Switching to the DOS Prompt** explains how you switch to the DOS prompt.
- **Deleting Programs from Task Switcher** explains how you remove programs from the list of active tasks.
- **Unloading Task Switcher from Memory** explains how you remove Task Switcher from your computer's memory.
- **Command-Line Options** describes the command-line options you can use to customize Task Switcher.

Starting Task Switcher

▶ If you haven't already loaded Task Switcher into memory, choose **Startup Programs** from the Configure menu in PC Tools Desktop, then select the Task Switcher option from the window that appears.

When you reboot after saving your configuration changes, the Task Switcher loads into memory.

or

From DOS, type

CPTASK Enter

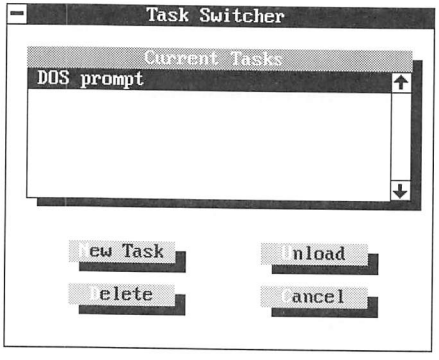
The Task Switcher loads into memory and displays a message showing how much memory remains free, the amount of EMS (expanded) or XMS (extended) memory used, and the hotkeys that activate Task Switcher. You can change these settings using command-line options, described later.

Managing Tasks

After loading Task Switcher in memory, you pop up the task list using the hotkeys, then you run the program you want to use. Each program you add becomes a new task. When you want to switch to another task, pop up the Task Switcher and select the next task. The program you've just worked with is saved in memory. Task Switcher does not close any files or update any files for the applications as they are switched.

- To manage tasks press Alt Esc.

NOTE *You can change the hotkey used to pop up Task Switcher. For more information, see "Command-Line Options" later in this chapter.*



What You See

The following commands at the bottom of the screen let you manage tasks:

New Task: Lets you start a new program.

Unload: Unloads Task Switcher from memory.

Delete: Lets you delete a program.

Cancel: Returns to the task you interrupted.

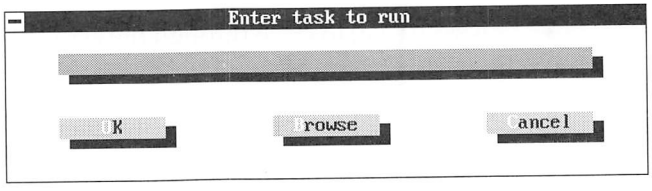
When you begin adding programs as tasks, they appear in the list of Current Tasks. To switch to a task, select the program from the Current Task list.

Adding Programs to Task Switcher

You can have up to eight programs running at the same time and switch between them. Task Switcher lets you add a ninth task, but you cannot switch tasks until you exit from one of the programs.

To start a new a task:

1. Choose **New Task.**



2. Type the program name and any command-line options and choose **OK**.

   If the directory for the program is not in your path statement as it appears in the AUTOEXEC.BAT file, you must type the full path to the file as well. For example, type `C:\WORD\WORD` to start Microsoft Word, if the \WORD directory is on your C drive but not in your path.

   or

   Choose **Browse** if you want to use a dialog box to help you find an application on your hard disk.

   This opens the file load dialog box, which lets you select a file to load.

You can add command-line options applicable to the program. For example, you can start Word with the document PROJECTS.DOC by typing in the text box:

```
C:\WORD\WORD PROJECTS.DOC
```

You must pop up Task Switcher and add a second program as a task before you can start switching between tasks.

Each time you switch to another task, Task Switcher saves information about the current task and data to a temporary swap file. These swap files can grow to a large size, depending on the programs you are working with and how much data you are using.

If you are using a disk to hold the temporary swap files, you should allow 500K to 600K of free disk space per application added to the Current Tasks list for its temporary files.

Switching Between Programs

Once you have two or more programs running, you can switch between them.

WARNING Low-level, disk-intensive programs such as Compress, Unformat, CP Backup, or DiskFix disable the ability to switch tasks during their operation. These kinds of programs must have uninterrupted access to the disk or data loss or corruption may occur.

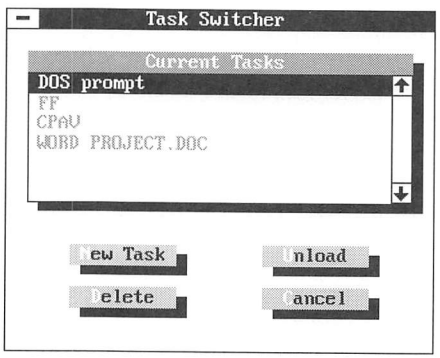
- Press Alt Tab to cycle through the active tasks.

  or

1. Press Alt Esc to pop up Task Switcher.
2. Select the task you want to run.

TIP *It might take a moment for the new task to appear if the task you've been using is a large one, or you're using a lot of data. If you tell Task Switcher to switch tasks to extended or expanded memory, or use PC-Cache, or a RAM drive, you will speed task switching.*

For example, in the following screen, select CPAV to switch to Central Point Anti-Virus.



Switching to the DOS Prompt

If you used the hotkey to start Task Switcher from the DOS prompt, the DOS prompt appears in the Current Task list. If you have not used a DOS prompt since starting Task Switcher, you can go to a DOS prompt by choosing **New Task** and leaving the the Enter Task to Run text box blank.

- Choose **DOS prompt.**

  The DOS prompt appears, yet Task Switcher remains memory-resident.

  To pop up Task Switcher, press Alt Esc.

Deleting Programs from Task Switcher

1. Select the task you want to delete from the Current Task list.
2. Choose **Delete**.

   A message prompts you to be sure that deleting the task is what you meant to do and cautions against deleting an active task. Central Point Software recommends that you exit from programs, rather than deleting them from the task list. If you delete a task while the program is performing an operation, you may lose data or cause data corruption.
3. If you are sure you want to delete the task, choose **Delete**.

You can also delete a task by quitting the program. For example, if PC Tools Desktop is a task you are working with, and you quit PC Tools Desktop, PC Tools Desktop is deleted from the Current Tasks list.

Unloading Task Switcher from Memory

- Select **Unload** from the Task Switcher menu.

  or

  From DOS, type

  ```
  CPTASK /U
  ```

  A message prompts you to be sure that unloading the Task Switcher is what you intend to do. When you unload the Task Switcher, all tasks will be deleted. Central Point Software recommends that you exit from programs before unloading the Task Switcher. If you unload a task while the program is performing an operation, you may lose data or cause data corruption.

  - If you are sure that you want to unload the Task Switcher, choose **Unload**.

    Task Switcher is then removed from memory.

Command-Line Options

You can configure Task Switcher various ways using command-line options. Use the following command syntax in a batch file or at the DOS prompt.

You can use these options in any sequence and reconfigure several aspects of Task Switcher at the same time. However, you must use the /U option alone.

```
CPTASK   [/CTRL] [/Fn]
         [/EMS:nnnn or /XMS:nnnn]
         [/LOW] [/TMP:d] [/U]
         [/VIDEO] [/?]
```

Option	Description
/CTRL	Lets you use Ctrl instead of Alt for the hotkey that pops up Task Switcher.
/Fn	Lets you define the second hotkey as a function key F1 through F12. For example, CPTASK /F1 lets you pop up the Task Switcher menu by pressing Alt F1 instead of Alt Esc.
/EMS=nnnn	Lets you specify how much expanded memory to use for holding temporary swap files, where *n*=K.
/XMS=nnnn	Lets you specify how much extended memory to use for holding temporary swap files, where *n*=K.
/LOW	Forces Task Switcher to load into conventional memory.
/TMP:d	Lets you specify which drive to contain temporary swap files.
/U	Unloads Task Switcher from memory.
/?	Displays command-line help for Task Switcher program.

TIP *Try to use memory for storing swap files. This can be extended memory (XMS), expanded memory (EMS), or a RAM drive. Task Switcher works more quickly when it accesses swap files in memory. 80K is the minimum amount of memory.*

Examples

```
CPTASK /CTRL /F4
```

Configures the hotkeys to Ctrl F4.

```
CPTASK /TMP:D
```

Specifies that Task Switcher stores image files on drive D.

```
CPTASK /EMS:1200
```

Specifies that Task Switcher uses up to 1200K of expanded memory to store swap files.

Central Point Scheduler for DOS

Central Point Scheduler lets you schedule *any program* to run without having to monitor the process. This is especially useful for lengthy procedures that don't require your presence, like Backup sessions, Commute scripts, or hard-disk compression. For example, you could perform a backup to a tape drive every workday at 7:00 pm. You can schedule any executable command accepted at the DOS prompt.

When a scheduled event occurs, Scheduler interrupts whatever program is running and provides a 15-second warning before it runs the scheduled event in case you are in the middle of an application that you do not want interrupted. When the event is complete (for example, making a backup), Scheduler returns to the application you were running.

Here's what you'll find in this chapter:

- **Scheduling a Program** explains how to schedule events to run unattended.
- **Before Launching Scheduled Events** explains how to load the memory-resident program, CPSCHED, which is responsible for launching scheduled events.
- **Editing Existing Scheduled Events** explains how to change options for events you have already scheduled.
- **Deleting Scheduled Events** explains how to remove an event from the list of scheduled events.
- **Removing Scheduler from Memory** explains how to remove the memory-resident portion of Scheduler from memory.
- **Command-Line Options** describes the command-line options.

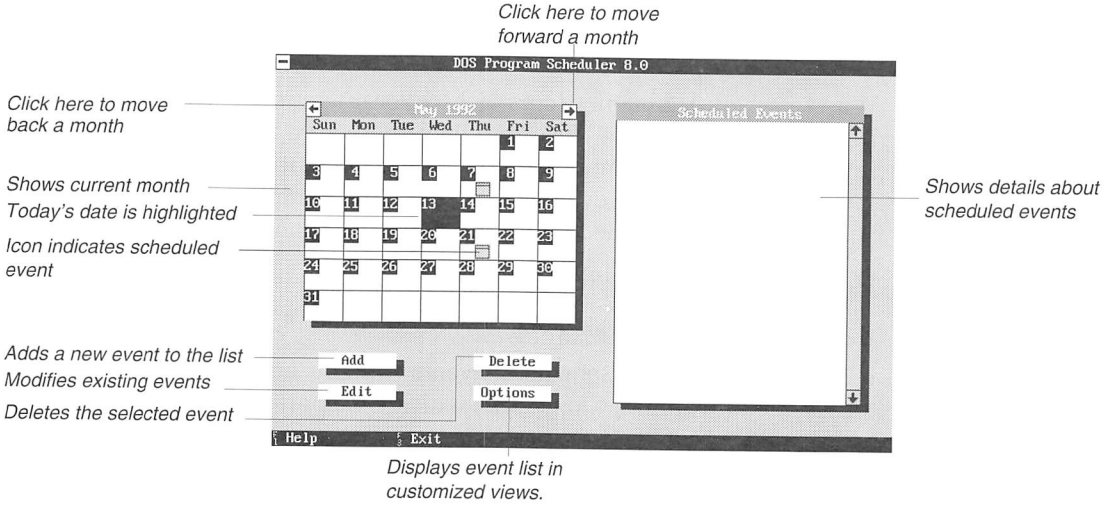
Scheduling a Program

1. Choose **Program Scheduler** from the Tools menu in PC Tools Desktop.

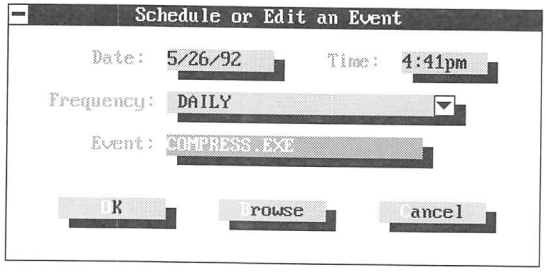
   or

   From DOS, type

   SCHEDULE



2. Select the day on the calendar you want to schedule a program to run.
3. Choose **Add**.



4. If you want to change the date, then type the date, using the format mm/dd/yy in the Date text box.

5. Type the time you want to schedule your program, using the format `hh:mm` (`a` or `p`, Scheduler appends an "m" for you) in the Time text box.

   Do not put a space between the time and the am or pm.

6. Select a frequency.

   Daily: Schedules the event to occur every day.

   One Time Only: Schedules the event to occur one time.

   Workdays Only: Schedules the event on the days you identify as workdays. You select the days of the week you want treated as workdays with the Options button on the main scheduler window. See the section, "Scheduler Options" later in the chapter for details.

   Weekly: Schedules the event on the same day every week.

   Monthly-Fixed Day: Schedules the event on the same date every month.

   Monthly-Fixed Weekday: Schedules the event on the the same weekday every month.

   Biweekly: Schedules the event on the same weekday every other week.

7. Type the program name in the Event text box.

   For example, type `COMPRESS` and any options (up to 64 characters). The file's extension is not necessary, and you can use any DOS character.

   or

   Choose **Browse** to navigate to the directory and file that you want to schedule.

   See *Part 1 Getting Started* in this volume for information about navigating the File Load dialog box.

NOTE *If you are scheduling a CP Backup event, this dialog box shows a Setup option. If you are scheduling a Commute event, this dialog box shows a Script option. See the scheduling sections in Volume 2,* Part 2 Central Point Backup *and* Part 3 Central Point Commute *for descriptions of these options. You can also schedule automatic virus scanning from Central Point Anti-Virus. See* Part 1 Central Point Anti-Virus *in Volume 2 for details.*

8. Choose **OK** to save this information.

9. Continue in this manner until you have scheduled all the events you want.

10. Choose **Exit**.

11. Make sure the **Save Changes in Schedule** option in the Close dialog box is checked to save your scheduling information.

When you want the program to run, be sure the computer is on and CPSCHED is loaded. The scheduled event occurs at the specified time and returns the machine to the state it was in prior to the event.

Before Launching Scheduled Events

The memory-resident portion of Scheduler (CPSCHED.EXE) must be resident to launch a program at the scheduled time. If you did not choose to have Scheduler load automatically when you installed PC Tools, you must load CPSCHED prior to running any scheduled programs.

▶ To do so, from DOS type,

```
CPSCHED
```

You can add CPSCHED to your AUTOEXEC.BAT at any time by using the **Select Startup Programs** command in PC Config or from the Configure menu in PC Tools Desktop.

If you have an execution password set for Central Point Anti-Virus, DiskFix, or Compress, make sure you remove the password before the program is scheduled to run or it won't start as scheduled.

Editing Existing Scheduled Events

If you have scheduled events that you want to change, for example, from daily at 5:00 pm to daily at 7:00 pm, edit your events.

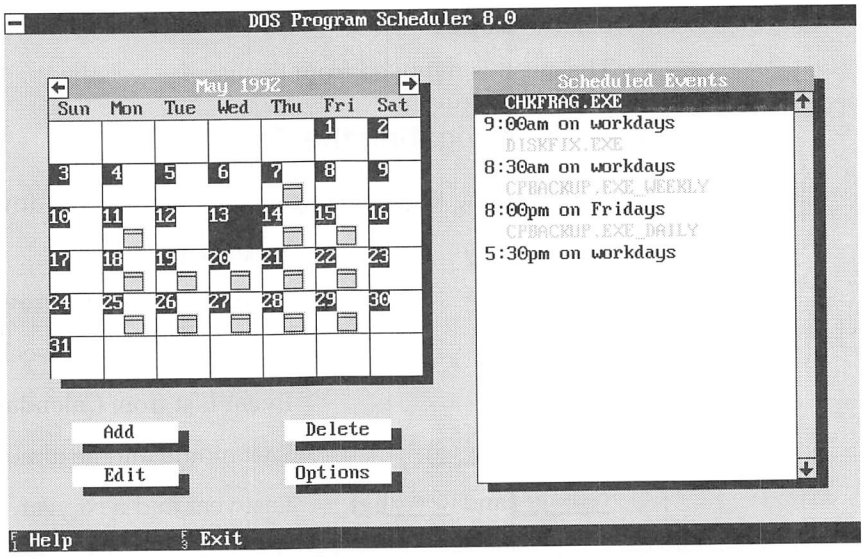
1. Choose **Program Scheduler** from the Tools menu in PC Tools Desktop.

   or

   From DOS, type

   SCHEDULE Enter

   The Scheduler window appears with events scheduled. Icons appear on each day there is a scheduled event.



2. Select the event you want to change in the Scheduled Events list.
3. Choose **Edit**.
4. Make your changes in the Schedule or Edit an Event dialog box.

   For details, see steps 4-7 in the previous section, "Scheduling a Program."
5. Choose **OK** to save this information.
6. Choose **Exit**.
7. Make sure the **Save Changes in Schedule** option in the Close dialog box is checked to save your scheduling information.

Deleting Scheduled Events

If you decide you don't want a scheduled event to occur anymore, you can delete it.

1. Choose **Program Scheduler** from the Tools menu in PC Tools Desktop.

   or

   From DOS, type

   SCHEDULE Enter

   The Scheduler window appears with events scheduled.
2. Select the event you want to delete in the Scheduled Events list.

3. Choose **Delete**.

   The event is removed from the list.

Keystrokes for Navigating the Calendar

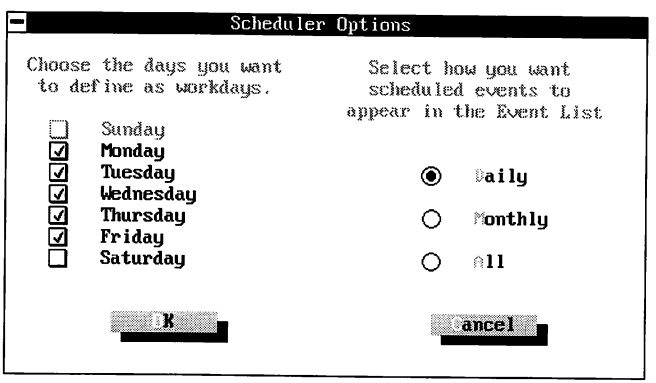
Use the following keys to navigate the Calendar window.

Use This Key	To Move to
← and →	Yesterday and tomorrow.
↑ and ↓	Last week and next week.
Tab	Event List from Calendar and back.
Pg Up and Pg Dn	Last month and next month.
Control ← and Control →	Last year and next year.

Scheduler Options

The **Options** button lets you define what days you want the Scheduler to recognize as workdays, and change how scheduled events appear in the list: daily, monthly, or all.

When you choose **Options**, the following dialog box appears:



1. Select the days you want defined as workdays.

   This specifies the days of the week that are treated as workdays and appear as options under Frequency.

2. Select how you want scheduled events to appear in the Event List.

   Daily: Displays only those events scheduled on the selected date.

   Monthly: Displays those events scheduled on any day in the current month.

   All: Displays all scheduled events.

Removing Scheduler from Memory

▶ To remove CPSCHED from memory, from DOS type,

```
KILL
```

or

```
CPSCHED /U
```

You can also remove CPSCHED from your AUTOEXEC.BAT file by using the **Select Startup Programs** command in PC Config.

Command-Line Options

You can add command-line options that have the same effect as scheduling events from each of the specified programs.

Use the following command syntax at the DOS prompt:

```
SCHEDULE [CPBACKUP or COMMUTE or CPAV]
         [/?] [/VIDEO]
```

Only one option is allowed.

NOTE *When you start Scheduler without any of the command-line options, you will see all scheduled events. If you start Scheduler from CP Backup, Commute, or Central Point Anti-Virus, you will see scheduled events for the specified program only.*

Option	Description
CPAV	Displays Central Point Anti-Virus events.
CPBACKUP	Displays CP Backup events.
COMMUTE	Displays Commute events.
/?	Displays command-line help for Scheduler options.
/VIDEO	Displays command-line help for Scheduler's display and mouse options.

Central Point Scheduler for Windows

Central Point Scheduler for Windows is included with PC Tools to provide a way for you to run important data-protection programs at scheduled times from Windows. Central Point Scheduler for Windows lets you schedule unattended backups, Commute sessions, Central Point Anti-Virus scans, the sending and receiving of Email, and regular disk analysis with DiskFix. You can also continue to receive notification of appointments while running Windows.

Here's what you'll find in this chapter:

- **Loading the Scheduler Automatically** explains how to have the Scheduler loaded automatically each time you run Windows.
- **Opening the Scheduler** explains how to open Scheduler from the Program Manager.
- **Scheduling a Backup** explains how to schedule unattended backups without the necessity of monitoring the procedure.
- **Scheduling Commute Sessions** explains how to automate your Commute sessions using predefined scripts. Commute runs the designated script at the scheduled time, and then returns to Windows when the session is complete.
- **Sending and Receiving Email** explains how to specify the times you want to send and receive Email from online services.
- **Scheduling DiskFix** explains how to schedule DiskFix to check your hard disk regularly.
- **Scheduling Virus Scans** explains how to specify the times you want to scan your hard disk for virus infection while running Windows.
- **Scheduler Commands** describes the additional commands available from Scheduler.

Loading the Scheduler Automatically

During installation, Install gives you the option to load the Scheduler automatically every time you run Windows.

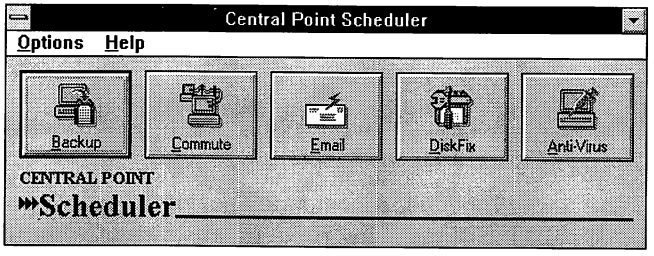
1. Run Install and choose **OK** when asked if you want to load the Scheduler automatically every time you run Windows.

   This option modifies your WIN.INI file automatically.

   If you want to modify your WIN.INI file yourself, see the section "Modifying Your WIN.INI File" in the *TSR Manager* chapter in this part of the manual.

2. Start Windows.

   The Scheduler is loaded automatically.



Opening the Scheduler

You can open the Scheduler by:

- Double-clicking the minimized icon on the desktop.

  or

  Double-clicking the Scheduler icon in the PC Tools program group in the Program Manager.

  or

  Using the **Run** command from the Program Manager's File menu.

Scheduling a Backup

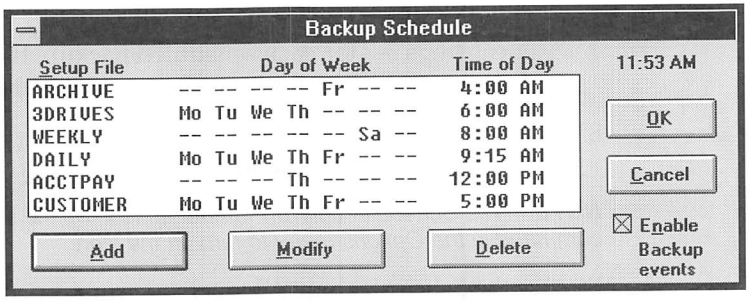
The Scheduler lets you schedule Central Point Backup to run completely unattended at a specified time.

Central Point Backup must be properly installed and configured, and you must have setup files to schedule backups. See the *Selecting Drives and Files* chapter in *Part 2 Central Point Backup* in Volume 2 for details on creating setup files.

1. Open the Scheduler.

   If you are running Central Point Backup, you can choose the **Scheduler** icon button or the **Schedule Backups** command.

2. Choose **Backup**.


Backup Schedule
Setup File
Day of Week
Time of Day
11:53 AM
ARCHIVE -- -- -- -- Fr -- -- 4:00 AM
3DRIVES Mo Tu We Th -- -- -- 6:00 AM
WEEKLY -- -- -- -- -- Sa -- 8:00 AM
DAILY Mo Tu We Th Fr -- -- 9:15 AM
ACCTPAY -- -- -- Th -- -- -- 12:00 PM
CUSTOMER Mo Tu We Th Fr -- -- 5:00 PM
OK
Cancel
Enable Backup events
Add
Modify
Delete

(If you have not scheduled any backups, only the **Add** button is selectable.)

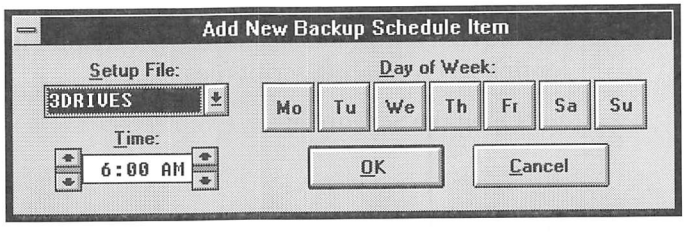
Add: Brings up the Add New Backup Schedule Item dialog box.

Modify: Lets you edit the highlighted entry.

Delete: Deletes all selected entries from the list. This does not delete the associated setup file.

Enable Backup events: If you want all backup events ignored while Windows is running, remove the check from the checkbox.

3. Choose **Add**.



4. Select **Setup File** to choose a file from the drop-down list box. The above illustration shows a file called 3DRIVES.
5. Select the **Day of Week** by clicking with the mouse, or using Tab, and then Spacebar.

   A border appears around each selected day.
6. Enter the time you want the backup to start—in the above illustration, 6:00 AM.

   ▶ Use the left set of arrow buttons to set the hour, and use the right set of arrow buttons to set the minute.

   or

   Type the time.
7. Choose **OK**.

   Your entry is saved and the Backup Schedule window appears.

   Repeat steps 3-7 for each scheduled backup, then choose **OK** in the Backup Schedule window to return to the main Scheduler window.
8. Click the minimize icon to keep the Scheduler active (it must be running when the backup is scheduled to start).

NOTE *The Scheduler can run without an icon on the screen. Use the Show Icon command in the Options menu to turn off the icon.*

Be sure the Scheduler and Windows are running and a tape or a floppy disk is in the drive when the backup is scheduled to start. The backup will progress without interrupting your current application.

Scheduling Commute Sessions

The Scheduler lets you run Commute Auto-Call scripts at specified times to perform tasks such as transferring files.

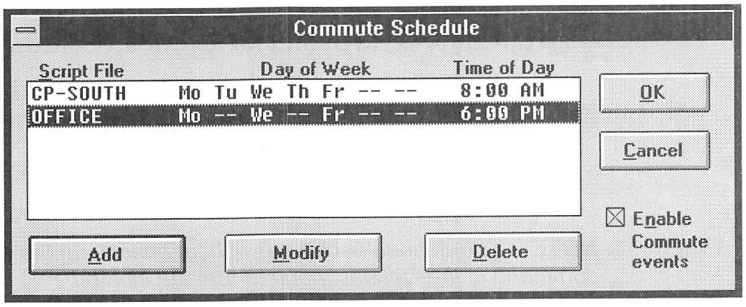
Commute must be properly installed and configured, and you must have script files to schedule sessions. You must also have the special Commute PIF (COMMUTEW.PIF) in the same directory as the Scheduler. If you used Install, COMMUTEW.PIF was placed automatically.

See the *Automating a Commute Session* chapter in *Part 3 Commute* in Volume 2 for details on creating script files.

1. Open the Scheduler.

2. Choose **Commute**.

   The following dialog box appears:



   (If you have not scheduled any Commute scripts, only the **Add** button is selectable.)

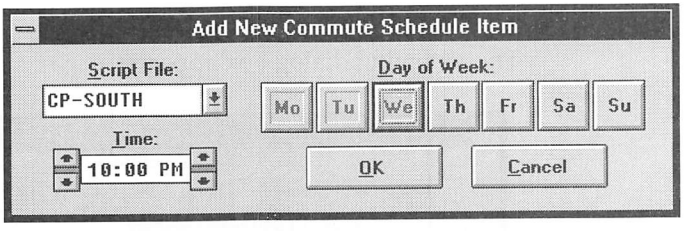
   Add: Brings up the Add New Commute Schedule Item dialog box.

   Modify: Lets you edit the highlighted entry.

   Delete: Deletes all selected entries from the list. This does not delete the associated script file.

   Enable Commute events: If you want all Commute sessions ignored while Windows is running, remove the check from the checkbox.

3. Choose **Add**.



4. Select **Script File** to choose a script from the drop-down list box. The above illustration shows a file called CP-SOUTH.

5. Select the **Day of Week** by clicking with the mouse, or using Tab, and then Spacebar.

   A border appears around each selected day.

6. Enter the time you want the session to start.

   ▶ Use the left set of arrow buttons to set the hour, and use the right set of arrow buttons to set the minute.

or

Type the time.

7. Choose **OK**.

   Your entry is saved and the Commute Schedule window appears.

   Repeat steps 3-7 for each scheduled session, then choose **OK** in the Commute Schedule window to return to the main Scheduler window.

8. Click the minimize icon to keep the Scheduler active (it must be running when the Commute session is scheduled to start).

NOTE *The Scheduler can run without an icon on the screen. Use the Show Icon command in the Options menu to turn the icon off.*

Sending and Receiving Email

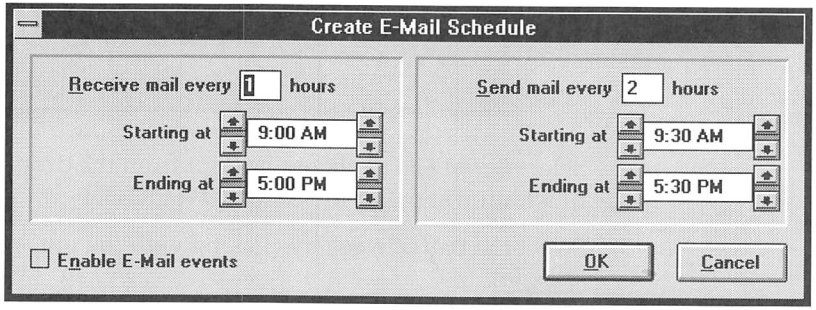
The Scheduler lets you send and receive Email, using the Email Desktop Accessory.

Desktop Accessories must be properly installed and configured, and you must have the special Desktop Accessories PIF in the same directory as the Scheduler. During installation, Install automatically copied the PIF file for you.

See the *Electronic Mail* chapter in *Part 4 Desktop Accessories* in Volume 2 for full details on using the Email features.

1. Open the Scheduler.
2. Choose **Email**.

   The following dialog box appears:



3. Set the options you want.

   Receive mail every __ hours: Enter a numeric value between 1 and 23.

   Starting at and **Ending at:** Use the arrow buttons to set the hour and minute for the time to start and stop receiving mail.

Send mail every __ hours: Enter a numeric value between 1 and 23.

Starting at and **Ending at:** Use the arrow buttons to set the hour and minute for the time to start and stop sending mail.

Enable E-Mail events: Click this box (or press Alt N) to have Desktop's Email services continue while Windows is running.

4. Choose **OK** to save your selections.

   Any changes to your Email settings go into effect under both DOS and Windows. (The Scheduler must be running for these to work under Windows.)

If you are running in 386-enhanced mode, Email events won't disrupt your current application.

Scheduling DiskFix

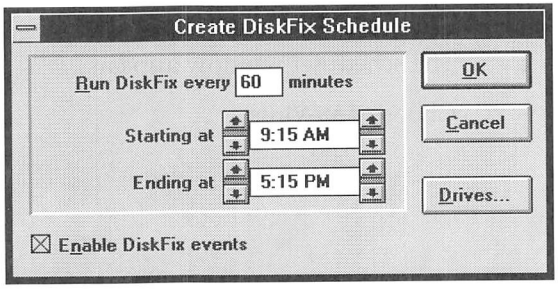
The Scheduler lets you schedule DiskFix to run disk integrity checks at regular intervals. As a preventive maintenance tool, DiskFix can detect and prevent potential problems before they occur.

DiskFix will not check floppy or network drives—only local hard drives.

See the *DiskFix* chapter for complete details on DiskFix's features.

WARNING DiskFix analyzes specified drives when Windows is running, but does not repair problems it discovers until you exit from Windows and run DiskFix from DOS. Making repairs while a multi-tasking program such as Windows is running could result in data loss.

1. Open the Scheduler.
2. Choose **DiskFix**.



3. Set the options you want.

   Run DiskFix every __ minutes: Enter a numeric value between 30 and 999.

   Starting at and **Ending at:** Use the arrow buttons to set the hour and minute to start and stop running DiskFix.

   Enable DiskFix events: Click this box (or press Alt N) to allow DiskFix to perform its diagnostics when Windows is running.

4. Choose **Drives** to select the drives you want to diagnose.

   DiskFix does not allow you to select network drives.

5. Choose **OK** to save your selections.

NOTE *If a password has been set with PC Config, DiskFix appears as a DOS icon. To run the DiskFix event, double-click the icon and then enter the password.*

Scheduling Virus Scans

You can schedule Central Point Anti-Virus to run unattended virus scans at regular intervals. As a preventive maintenance tool, Central Point Anti-Virus can detect and prevent virus infection before it occurs.

Central Point Anti-Virus checks local hard drives or network drives. If scanning a network drive, you must be attached and logged on to the server.

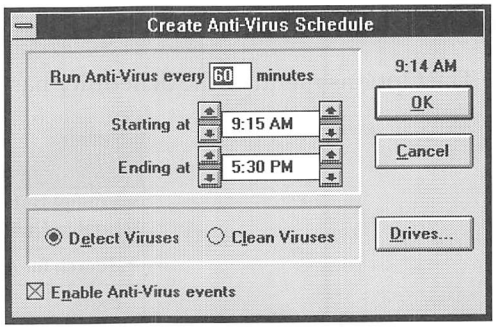
If you run a Windows application in standard mode and a scheduled scan occurs, the scan interrupts the current application, performs its task, and then returns to the interrupted application. A dialog box prompts you for any required information.

If you run Windows in 386 enhanced mode, an icon appears on your desktop to indicate the scheduled event is running. A dialog box prompts you for any required information.

1. Open the Scheduler

   The scheduler window appears.

2. Choose **Anti-Virus**.



3. Set the options you want.

   Run Anti-Virus every __ minutes: Enter a numeric value between 30 and 999. The default is 60 minutes.

   Starting at and Ending at: Use the arrow buttons to set the hour and minute to start and stop the monitoring of Central Point Anti-Virus. The default is 8:00 AM to 5:00 PM.

   Enable Anti-Virus events: Click this box (or press Alt N) to allow the Scheduler to monitor Central Point Anti-Virus when Windows is running. A dialog box informs you when it is time for a scan.

4. Choose **Drives** to select the drives you want to scan, then choose **OK**.

5. Choose **Detect Viruses** if you want to detect only.

   or

   Choose **Clean Viruses** if you want to clean any infected files.

6. Choose **OK** to save your selections.

   The scheduler window appears again.

7. Click the Minimize icon the keep Scheduler active.

NOTE *If a password has been set with PC Config, Central Point Anti-Virus appears as a DOS icon. To run the Central Point Anti-Virus event, double-click the icon and then enter the password.*

The scheduler can run without an icon appearing on the screen. Use the **Show Icon** command in the Options menu to turn off the icon.

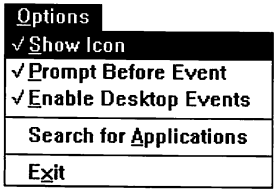
Be sure Scheduler and Windows are running when the scan is scheduled to start. The scan will progress without interrupting your current application.

Central Point Anti-Virus does not have to be running. When the scan is scheduled to begin, the program starts.

TIP *For the best precaution against virus infection, configure the scheduler to scan once a day at a time that's convenient for you.*

Scheduler Commands

The Options menu of the Scheduler has the following commands:



Show Icon: Toggles the appearance of the Scheduler icon on the desktop. When Show Icon is off, the Scheduler icon does not appear while it is running.

Prompt Before Event: Displays a dialog box 30 seconds before a scheduled event is about to begin. At that time, you can cancel the event, choose OK to dismiss the dialog, or ignore it and it will go away when the countdown is complete.

Enable Desktop Events: Monitors the appointment alarms in Desktop Accessories. A dialog box informs you when it is time for an appointment. The Appointment Scheduler in Desktop Accessories also runs applications at appointed times.

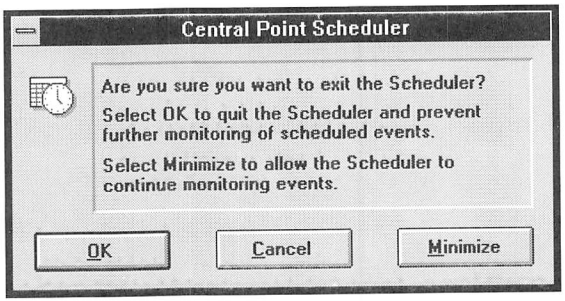
If a DOS application runs (other than Email or DiskFix), it runs in full-screen mode, and your Windows activities are suspended until the DOS application is finished. See the *Appointment Scheduler* chapter in *Part 4 Desktop Accessories* in Volume 2 for details on the types of events you can schedule.

You can also schedule a Windows application to run, using the Appointment Scheduler in Desktop Accessories.

Search for Applications: Searches and configures your system for other Central Point applications that can be monitored by the scheduler and saves the information in the WNSCHEDL.INI file. If your configuration or path changes after you install Central Point Anti-Virus, the scheduler may not be able to "find" the programs. Use this command to configure the scheduler.

Exit: Closes the Scheduler.

If you choose Exit, the following dialog box appears:


Central Point Scheduler
Are you sure you want to exit the Scheduler?
Select OK to quit the Scheduler and prevent further monitoring of scheduled events.
Select Minimize to allow the Scheduler to continue monitoring events.
OK
Cancel
Minimize

Choose **OK** to close the Scheduler. Closing the Scheduler means that scheduled events will not occur while Windows is running. Choose **Minimize** to keep the Scheduler active.

FileAttribute

FileAttribute is a command-line utility that lets you display, set, or reset a file or directory's attributes: hidden, system, read-only, or archive.

When you create a file or directory, DOS creates an entry in the directory structure that contains information about the file and directory such as the size, the time and date it was created, and the attribute. When you use the DOS DIR command, you see the file or directory's size, date, and time listed, but not the attribute.

Attributes You Can Modify

FileAttribute lets you list or modify any of the following four attributes for files and directories.

(Hid) Hidden: The file or directory is "invisible" and is not listed when you use the DOS DIR command. You assign this attribute to files and directories to make them more difficult to access. The DOS system files, IBMBIO.SYS and IBMDOS.COM for PC DOS, or MSDOS.SYS and IO.SYS for MS-DOS, are hidden and do not appear in a directory listing. PC Tools Desktop and FileFind display hidden files.

(Sys) System: The file or directory is "invisible" and is not listed when you use the DOS DIR command. PC Tools Desktop and FileFind display system files.

(R) Read Only: You can only read the file or directory; you cannot make any changes. This attribute protects the file or directory from accidental or unauthorized modification, such as renaming or erasing it.

(A) Archive: The archive bit is set, meaning the file or directory has changed and should be backed up during the next backup session. Central Point Backup uses this bit to determine which files to back up. Whenever you make a change to a file, DOS sets its archive bit.

Use caution when changing file attributes. For example, if you make data files read-only, this can sometimes interfere with the programs that work with those files. In addition, some programs modify their own files in response to setup procedures and configuration changes. If the read-only attribute has been set on these files, you will have to turn it off when running them.

Command-Line Options

Use the following command syntax at the DOS prompt: The commands operate on the files in the current directory.

```
FILEATTR filespec [/option+ or /option-]
         [/HID] [/SYS] [/R] [/A]
         [/D] [/CLEAR] [/NL] [/S] [/?]
```

Option	Description
/option+	Turns on the specified option. (See the following list.) Repeat this option to turn on multiple options.
/option-	Turns off the specified option. Repeat this option to turn off multiple options.
filespec	The file or files to be modified. Use the wildcards * and ? to specify a group of files. Specify the full path name if not the current directory.
/D	Operates on directories; the filespec is a directory name.
/CLEAR	Removes all file attributes.
/NL	Displays totals only. This option does not list the files or directories that were updated.
/S	Includes the files in subdirectories.
/?	Displays command-line help for FileAttribute options.

For *option*, substitute your choice from the following list. You can use multiple options together.

To see which files have a given attribute, without changing those attributes, specify the attributes without the + or - specification.

Option	Modifies This Attribute
/HID	Hidden
/SYS	System
/R	Read-Only
/A	Archive

Examples

```
FILEATTR BUDGET.WK1 /R+
```

Sets the read-only attribute for the BUDGET.WK1 file, which is in the current directory.

```
FILEATTR  C:\*.* /S
```

Lists all files in all directories on your C volume and shows all file attributes.

```
FILEATTR *.* /R+ /A+
```

Sets the read-only and archive attributes for all files in the current directory.

```
FILEATTR *.COM /SYS+ /R+
```

Sets the read-only and system attributes for all .COM files in the current directory.

```
FILEATTR *.* /SYS+ /HID+ /S
```

Sets the hidden and system attributes for all files and subdirectories of the current directory.

```
FILEATTR *.* /SYS /HID+ /S
```

Sets the hidden attribute for all system files in the current directory and its subdirectory. If you type a command that both displays files with a given attribute and changes attributes, only those files that are displayed are changed.

```
FILEATTR C:\*.* /R /A+
```

Archives all read-only files on the C drive.

```
FILEATTR C:\*.PVT /HID+ /S
```

Sets the hidden attribute for all *.PVT files (which could be your personal documents that you don't want others to access) on volume C.

```
FILEATTR C:\PROJECTS /R+ /D
```

Sets the read-only attribute for the \PROJECTS directory on drive C.

FileDate

FileDate is a command-line utility that lets you set, clear, or update the date, time, or both on a file or group of files. If no options are specified, files are updated to the current DOS date and time. The time format defaults to a 24-hour clock.

This utility is useful to specify a date and time for a group of files for archival purposes. Programmers using the Make utility that comes with many compilers may also find it useful to change the date and time for files.

The date format depends on the country where you use the program. For example, if you are using this program in many parts of Europe, the format for dates is dd-mm-yy.

Command-Line Options

Use the following command syntax at the DOS prompt. The commands operate on the files in the current directory. If you specify no options, all files in the current directory are updated to the current DOS date and time. However, FileDate requires a file specification.

```
FILEDATE filespec [/Dmm-dd-yy] [/Thh:mm:ss]
         [/L] [/S] [/?]
```

Option	Description
filespec	The file or files to be modified. Use the wildcards * and ? to specify a group of files. Specify the full pathname if not the current directory.
/D*mm-dd-yy*	Changes the date, using the format mm-dd-yy of the specified files.
/T*hh:mm:ss*	Changes the time of the specified files, using the format hh:mm:ss. Seconds are unnecessary.
/L	Updates and lists changed files.
/S	Includes the files in subdirectories.
/?	Displays command-line help for FileDate options.

Examples

```
FILEDATE BUDGET.WK1 /D09-14-92
```

Sets the date for the BUDGET.WK1 file in the current directory to September 14, 1992.

```
FILEDATE *.*
```

Updates all the files in the current directory to the current date and time.

```
FILEDATE PROJECT.TXT /T15:30
```

Sets the time for the PROJECT.TXT file in the current directory to 3:30 PM.

```
FILEDATE C:\PCTOOLS\*.PVT /T09:14 /S
```

Sets the time to 9:14 am for *.PVT files in the \PCTOOLS directory on drive C and any *.PVT files in subdirectories.

Net Message

Net Message (NETMSG.EXE) enables you to send short broadcast messages directly to other users on your Novell NetWare network. You can use Net Message to send messages from within PC Tools Desktop, or you can execute the utility from the DOS command line. With Net Message, you can send a message to just one user or to several users at the same time.

Here's what you'll find in this chapter:

- **Starting Net Message** explains how you start Central Point Net Message from PC Tools Desktop or from the DOS prompt.
- **Sending Broadcast Messages with Net Message** explains how you send a NetWare broadcast message to one or more users using Net Message.
- **Viewing Net Message Results** explains the messages Net Message displays after you send a message.

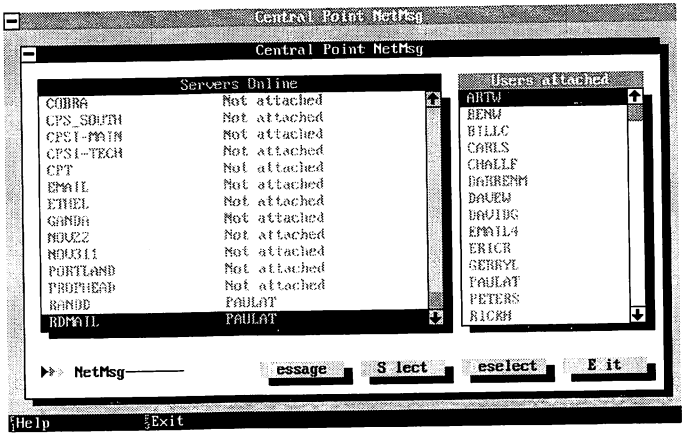
Starting Net Message

▶ Choose **Network Message** from the Tools menu in PC Tools Desktop.

or

From DOS, type

NETMSG Enter



Sending Broadcast Messages with Net Message

To send a message to another NetWare user:

1. Select a server from the Servers Online list, using a mouse or the arrow keys.

   You can send a broadcast message to any user on a server to which you are currently attached. The list of available users for the selected server appears in the Users Attached list.

2. Click in the Users Attached list or tab to it.

3. Select the user(s) you want to send a message to by clicking the user name or pressing the spacebar to select user names.

   Selected user names are highlighted in the list box.

   ▶ Choose **Select** to select all the names in the list. All the users attached to the selected server will receive your broadcast message.

   or

   Choose **Deselect** to deselect all the names in the list.

4. Choose **Message**.

   The Enter message to send dialog box appears.

5. Type a message of up to 55 characters.

NOTE *Net Message does not indicate the sender of the message. If you want the recipient to know that you sent it, you must identify yourself in the message.*

6. Choose **Send Message**.

   The message you typed is sent immediately to all the users you selected. The Results of sending message dialog box indicates whether the users received your message.

Viewing Net Message Results

After you send a message, Net Message lets you know if the message reached the users you sent it to. The Results of sending message dialog box displays numbers in the following categories:

- **Successful:** Number of messages that were received.
- **Full Buffer:** Number of messages not received because the user already had other messages waiting. NetWare allows a user to have up to two messages in the message buffer at any time.
- **Invalid Connection:** Number of messages not received because the user is no longer logged in or attached to the selected server.
- **Messages Blocked:** Number of messages not received because the user is rejecting broadcasts. Using the NetWare CASTOFF and CASTON commands enables users to choose whether they will receive broadcast messages.
- **Total:** The total number of users you addressed the message to.

DriveMap

DriveMap is a communication program that allows you to use your PC or laptop to copy, edit, or execute files on other PCs' hard drives or network drives. You can also use DriveMap to send your output to other PCs' parallel printers. DriveMap enables PCs and laptops that are not on a network to gain access to network drives. PCs using DriveMap must be connected to one another by Local Area Network (LAN) or by direct cable connection.

Here's what you'll find in this chapter:

- **System Requirements** lists the requirements and cable installation instructions for using DriveMap.
- **Configuring DriveMap** explains how to configure DriveMap on your first-time startup and from PC Tools Desktop.
- **The Device Manager** explains how to use DriveMap's main menu.
- **Mapping a Drive** explains how to assign a drive letter on your PC to a drive on another PC.
- **Unmapping a Drive** explains how to unassign a drive letter on your PC.
- **Mapping a Port** explains how to assign a parallel port on your PC to a parallel port on another PC.
- **Unmapping a Port** explains how to unassign a parallel port on your PC.
- **Protecting and Unprotecting a Drive or Port** explains how to prohibit other users from accessing your selected drives and ports.
- **Using the Control Panel** explains how to enable or disable DriveMap's access to your network and serial and parallel ports, how to change your user name, and add password protection.
- **DriveMap Tips** provides tips for using DriveMap.
- **Command-Line Options** lists the options you can specify when starting DriveMap from the DOS command line.

System Requirements

To use DriveMap on a network, your PC must include a network card, with a Novell or NetBIOS driver loaded.

To use DriveMap between two PCs cabled together, each PC must include:

- An unused parallel port or an unused serial port on each PC.
- A serial cable (if you're connecting PCs using serial ports). Use a 7-wire null-modem cable or see the coupon included in your PC Tools package.
- A Centronics parallel cable and adapter (if you're connecting PCs using parallel ports). See the coupon included in your PC Tools package.

Connecting PCs Using Parallel or Serial Cable

You can connect your PC to another PC directly to share the resources of both using a parallel or serial cable. In many cases, you will use this procedure to connect a laptop PC to a desktop PC. If you are a network user, and are unconcerned with this procedure, skip this section and go directly to the following section "Configuring DriveMap."

NOTE *A PC that is not on a network can gain access to the network if it is cabled to a PC that is on a network. This allows the PC to have access to network drives, but not to the drives and printer ports of the individual PCs on the network.*

1. Locate an unused parallel port on each PC or an unused serial port on each, and plug the parallel or serial cable into it, depending on the type of port you've selected. You can use parallel ports LPT1 or LPT2 or serial ports COM1 or COM2.
2. Make sure that DriveMap is installed on both PCs.
3. Continue to the section "Configuring DriveMap" and configure DriveMap on *each* PC you've cabled together.

Configuring DriveMap

Before you can configure or use DriveMap, the DRIVEMAP.EXE program file must be loaded in your PC as a memory-resident program.

You can load DriveMap three ways: from the Configure menu in PC Tools Desktop, from PC Config, or from DOS.

NOTE *If you have already loaded this program resident, and you want to configure DriveMap from within PC Tools Desktop, continue to the section "Desktop Configuration."*

Loading DriveMap from within PC Tools Desktop or PC Config

1. Choose **Startup Programs** from PC Config, or from the Configure menu in PC Tools Desktop.
2. Select the DriveMap option from the window that appears and choose **OK** to save your configuration changes.
3. Choose **Reboot** to reboot your PC.

   From now on, each time you boot your PC, DriveMap will be loaded as a TSR automatically.

   The first time you use DriveMap, you are asked for some configuration information. If this is your first time, continue to the section "First-Time Configuration." Otherwise, continue to the section "Desktop Configuration."

Loading DriveMap from DOS

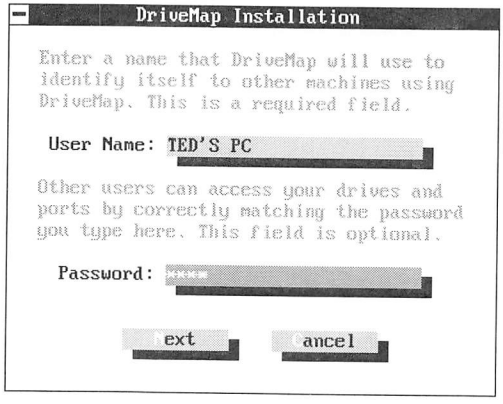
▶ From DOS, type

`DRIVEMAP` Enter

This loads DriveMap memory-resident temporarily. As soon as you reboot your PC, DriveMap is no longer resident. The first time you use DriveMap, you are asked for some configuration information. If this is your first time, continue to the section "First-Time Configuration." Otherwise, continue to the section "The Device Manager."

First-Time Configuration

The first time you configure DriveMap on your PC, the DriveMap installation dialog box appears.


DriveMap Installation
Enter a name that DriveMap will use to identify itself to other machines using DriveMap. This is a required field.
User Name: TED'S PC
Other users can access your drives and ports by correctly matching the password you type here. This field is optional.
Password:
ext
ancel

1. Enter a DriveMap user name.

   Your DriveMap user name identifies you to other DriveMap users. If you supplied a name during the PC Tools installation, that name is used as the default. For more on user names, see "Using the Control Panel" later in this chapter.

2. Enter a password, if you want.

   When you enter a password, other DriveMap users can access your protected drives and ports only if they know your password. If you don't enter a password, no one can access your protected drives and ports. For more on passwords, see "Using the Control Panel" later in this chapter.

3. Choose **Next** to continue the configuration.

4. Using the following table, select the type of connection you'll use most often.

   No matter what you select, you can change the connection type later, using the Control Panel.

NOTE *If an option is not available on your PC, it is dimmed and you cannot select it.*

Select This Option	To Indicate That
LPT1 Parallel Enabled	Another PC could be cabled to your LPT1 port.
LPT2 Parallel Enabled	Another PC could be cabled to your LPT2 port.
COM1 Serial Enabled	Another PC could be cabled to your COM1 port.
COM2 Serial Enabled	Another PC could be cabled to your COM2 port.
SPX Network Enabled	Your PC is connected to a Novell network.
NetBIOS Network Enabled	Your PC is connected to a NetBIOS network.

5. Choose **OK** to exit from the Install dialog box.

   If you are configuring DriveMap from DOS, the Device Manager appears. Continue to the section "The Device Manager."

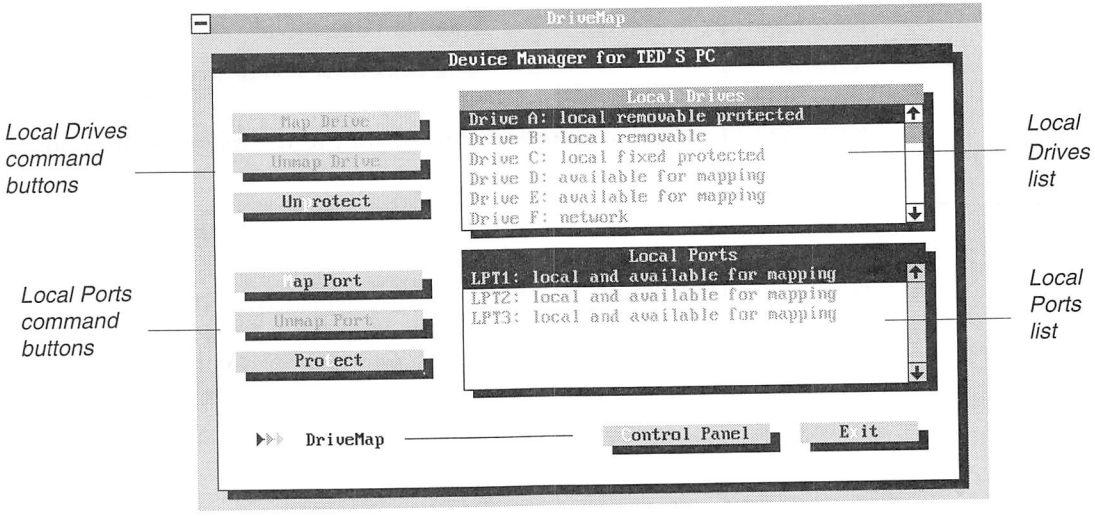
   If you are configuring DriveMap from the Configure menu in PC Tools Desktop, you return to the DOS prompt. Continue to the section "Desktop Configuration."

Desktop Configuration

To configure DriveMap from within PC Tools Desktop, choose **Drive Mapping** from the Configure menu in PC Tools Desktop. Then, continue to the section "The Device Manager."

The Device Manager

The Device Manager is DriveMap's main menu. The Device Manager allows you to control your drives and ports and use other PCs' drives and ports.



The Device Manager displays the Local Drives and Local Ports scrollable lists, and displays command buttons for controlling your devices. You use the Control Panel command button to change your user name or password, or to change the type of connection(s) you're using to access other PCs.

The Local Drives and Local Ports lists allow you to select a drive or parallel port on your PC and protect it or unprotect it from access. You can also select a drive or port to map to or unmap from other PCs' drives and ports.

Mapping is the process of assigning a drive letter or parallel port to another drive or parallel port on a different PC. Mapped drives and ports let you use those drives and ports as if they were your own.

NOTE *As you select drives or ports in the Local Drives list and the Local Ports list, the command buttons to the left of each list become highlighted or dimmed, indicating that the options are available or unavailable, respectively.*

The Local Drives List

The Local Drives list displays two types of drives: drives on your PC others can use, and drive letters you can assign to other PCs' drives. Valid drive letters are A through Z.

Drives on Your PC Others Can Use

The Local Drives list displays the following drive indicators:

This Drive Indicator	Defines the Drive As
Local Removable	Your floppy disk drive or removable media.
Local Fixed	Your hard disk drive.
Network	A network drive you're accessing.

Each of these drive indicators can include one of the following drive messages:

This Drive Message	Means
Is being mapped	Another PC is using this drive. No one else can map to this drive.
Locked	Others cannot map to this drive because you have a disk utility, such as DiskFix, running in your PC's background. Such a utility causes DriveMap to prevent others from accessing the drive.
Protected	Others cannot map to this drive because you have protected it. However, you can allow others to use your password to override the protection.

If none of these drive messages appear on a drive listed with one of the previous drive indicators, other users can map to that drive.

Drives Letters You Can Assign to Other PCs' Drives

This Drive Indicator	Means
Available for mapping	You can use the drive letter to map to other PC's drives.
Is mapped to	You're already using the drive letter to map to another PC's drive.

NOTE *If you don't have any drives listed as "available for mapping," check your CONFIG.SYS file for the line* `LASTDRIVE=n`*. If you see this line, change* `n` *so that it is at least two letters further into the alphabet. For example, if the line reads* `LASTDRIVE=d`*, change* `d` *to* `f`*. This provides two drive letters you can use to map to other drives. The DOS default for LASTDRIVE is* `LASTDRIVE=E:`*. As you specify letters further into the alphabet, you increase the number of drives you can use to map to other drives, but you decrease the number of drives you can map to on the network.*

The Local Ports List

The Local Ports list displays your parallel ports. You can use these ports to map to other's ports and to allow others to map to your ports.

Valid ports are LPT1, LPT2, and LPT3. Even if your PC has only one physical parallel port, DriveMap creates three logical parallel ports (LPT1, LPT2, and LPT3) for mapping.

Status Messages for Your Parallel Ports

The Local Ports list displays the following LPT parallel printer port messages for each port, depending on the status of each port.

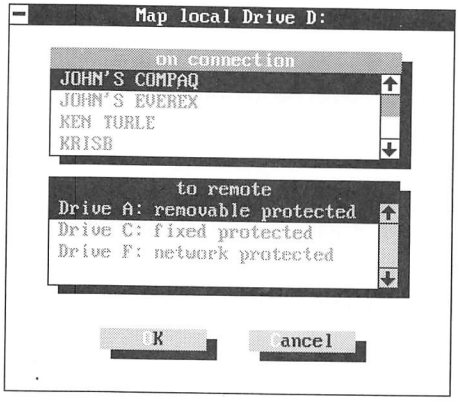
NOTE *A port may display a combination of these messages.*

This Port Message	Means
Available for mapping	You can use this port to map to another PC's port.
In use by comms link	The port is cabled to another PC's port. This port cannot be accessed by another PC.
Local port is being mapped	Another user is currently mapped to this port.
Mapped to LPT*n*	You are currently using this port to map to another PC's port.
Protected	Others cannot map to this port because you have protected it. However, you can allow others to use your password to override the protection.
Unprotected	Another user can map to this port.

Mapping a Drive

1. Select a drive in your Local Drives list that displays a drive indicator as "available for mapping" and choose **Map Drive**.

   The Map Local Drive dialog box is comprised of two scrollable lists: the Connection list and the Remote list.



2. Select a PC to map to in the Connection list.

   The Connection list displays the other DriveMap users' PCs that are connected to your PC. The PCs are listed by a user name (such as JOHN'S COMPAQ) if they are connected to yours on a network. The PCs are listed as LPT1 or LPT2 if connected by cable to your parallel port. The PCs are listed as COM1 or COM2 if connected by cable to your serial port.

3. Select a drive to map to in the Remote list.

   The Remote list displays the drives of the PC selected in the Connection list. The Remote list appends the drives with the following messages.

NOTE *A port may display a combination of these messages.*

This Drive Message	Defines the Drive As
Removable	Another user's floppy disk drive or removable media.
Fixed	Another user's hard disk drive.
Network	Another user's network drive.
Protected	Protected by the user. You cannot map to a protected drive unless you can override the protection with a password.
Locked	Unavailable. Others cannot map to this drive because you have a disk utility, such as DiskFix, running in your PC's background.

You can map all drives except "locked" drives, and drives that have been "protected" without use of a password.

NOTE *If the DriveMap user has included a password in the DriveMap control panel, you can access that user's protected drive by selecting that drive and providing the correct password.*

4. Choose **OK**.

   The Device Manager appears and the Local Drives list is updated to show the drive as mapped.

Unmapping a Drive

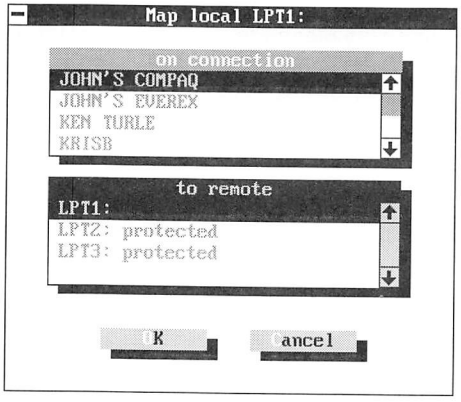
- From the Device Manager, select a drive in your Local Drives list that displays the drive indicator message "is mapped to" and choose **Unmap Drive**.

  The Device Manager's Local Drives list is updated to show the drive as available for mapping.

Mapping a Port

1. Select a port in your Local Ports list that displays a port message as "available for mapping" and choose **Map Port**.

   The Map Local Port dialog box contains two scrollable lists: the Connection list and the Remote list.



2. Select a PC to map to in the Connection list.

   The Connection list displays the other DriveMap users' PCs that are connected to your PC. The PCs are listed by a user name (such as JOHN'S COMPAQ) if they are connected to yours on a network. The PCs are listed as LPT1 or LPT2 if connected by cable to your parallel port. The PCs are listed as COM1 or COM2 if connected by cable to your serial port.

3. Select a port to map to in the Remote list.

   The Remote list displays the ports of the PC selected in the Connection list. The Remote list sometimes appends a port with the following messages.

The Port Message	Defines The Port As
Protected	Protected by the user. You cannot map to a protected port unless you can override the protection with a password.
In use by comms link	The port is cabled to another PC's port. This port cannot be accessed by another PC.

   You can map all ports except "In use by comms link" ports and ports that have been "protected" without use of a password.

NOTE *If the DriveMap user has included a password in the DriveMap control panel, you can access that user's protected port by selecting that port and providing the correct password.*

4. Choose **OK**.

   The Device Manager appears and the Local Ports list is updated to show the port as mapped.

NOTE TO WINDOWS USERS *If you map your LPT1 port to another user's printer port, you must select the LPT1.DOS printer driver in the Windows Printer Option control panel in order to print to that port in Windows. If you map your LPT2 port, you must select the LPT2.DOS printer driver. Otherwise, Windows prints to your physical LPT1 or LPT2 port, and not to the port you've mapped to.*

Unmapping a Port

- From the Device Manager, select a port in your Local Ports list that displays the port message "mapped to" and choose **Unmap Port**.

  The Device Manager's Local Ports list is updated to show the port as available for mapping.

Protecting and Unprotecting a Drive or Port

You can specify which of your PC's drives or ports are to be accessible or inaccessible to other DriveMap users. You may specify some or all of your physical drives and ports, including any network drives your PC is accessing.

NOTE *Users who have specified a password in the Control Panel allow others to access all of their protected drives and ports, only if they provide the password. If you want to protect your drives and ports from all access, make sure the password field in DriveMap's Control Panel is blank.*

1. Scroll through the Device Manager's Local Drives or Local Ports list until you find the drive or parallel port you want to protect or unprotect.
2. Select that drive or port and choose **Protect** or **Unprotect**.

   This option is a toggle. If the drive or port was previously accessible to DriveMap users, then choosing Protect makes the drive or port inaccessible. If the drive or port was previously inaccessible, then choosing Unprotect makes the drive or port accessible.

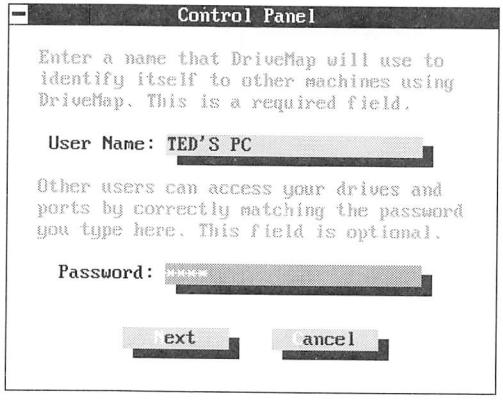
Using the Control Panel

You can configure DriveMap to enable or disable its access to your network (if you are on a network). You can also enable or disable DriveMap's access to your serial and parallel ports. These settings are saved in a configuration file named DRIVEMAP.CFG.

NOTE *These are the same options you initially configured when you loaded DriveMap for the first time.*

1. Choose **Control Panel** from the Device Manager's main menu.

   The first screen of the Control Panel displays your user name and password.


Control Panel
Enter a name that DriveMap will use to identify itself to other machines using DriveMap. This is a required field.
User Name: TED'S PC
Other users can access your drives and ports by correctly matching the password you type here. This field is optional.
Password:
ext
ancel

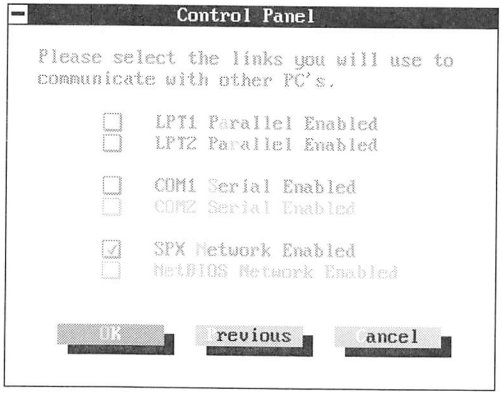
User Name: A required name that identifies your PC to other DriveMap users. The user name can be up to 24 alphanumeric characters, can include spaces, and should be unique so that other users can identify you.

Password: Enables other DriveMap users who know your password to override the protected status you give to any drive or port. The password can be up to 24 alphanumeric characters.

As you enter a password, each character is replaced by an asterisk to provide security. If you forget what your password is, enter a new password. Or, if you later choose to make your protected drives and ports inaccessible, with no override, clear the password field of all asterisks.

2. Choose **Next** from the first screen of the Control Panel.

   The second screen of the Control Panel appears, containing the configuration of your current network or cabling system.



These options must be set to specify the type of connection(s) your PC is using to access other PCs.

Using the following table, select the type of connection you'll use most often. A check mark in the box beside each option indicates the option is "ON."

NOTE *If an option is not available, it is dimmed and you cannot select it.*

Select This Option	To Indicate That
LPT1 Parallel Enabled	Another PC could be cabled to your LPT1 port.
LPT2 Parallel Enabled	Another PC could be cabled to your LPT2 port.
COM1 Serial Enabled	Another PC could be cabled to your COM1 port.
COM2 Serial Enabled	Another PC could be cabled to your COM2 port.
SPX Network Enabled	Your PC is connected to an Novell network.
NetBIOS Network Enabled	Your PC is connected to a NetBIOS network.

To save these settings for future sessions, you must select the Save Settings option in the Exit dialog box that appears when you exit from the Device Manager. The settings are saved in the DRIVEMAP.CFG file in the PCTOOLS\DATA directory.

DriveMap Tips

- If it is likely that one or more DriveMap users might use the same file at the same time on a particular PC, you must load the DOS SHARE utility on the PC where the file resides. The DOS SHARE utility prevents a file from being opened by more than one user at a time. See your DOS manual for instructions regarding SHARE.EXE.
- To make a directory available to other DriveMap users, rather than the entire drive, use the DOS SUBST command to substitute the directory's name for a drive letter. Then, allow other DriveMap users to map to that drive letter. See your DOS manual for instructions regarding the SUBST command.

Command-Line Options

You can specify options from the DOS command line to use with DriveMap. These options provide a faster way of changing your setup without requiring you to modify your configuration each time. For example, if you need to provide different types of access to your drives and ports frequently, you can create a batch file that includes the appropriate settings for each access type.

The command line uses the following syntax:

```
DRIVEMAP [NAME=user name] [SOCKET=nnnn] [PROTECT=ALL]
[UNPROTECT=ALL] [PASSWORD=password] [/U] [/R] [+LPTn]
[+COMn] [+SPX] [+NETBIOS] [/VIDEO] [/INSTALL]
```

NOTE *A user name is required. The /U cannot be used with any other option. Options not specified are set to the default.*

Option	Description
/?	Displays an online description of command-line options.
NAME=*user name*	Specifies your user name. This option is required in every command line. Your user name can be up to 24 alphanumeric characters, can include spaces (if you enclose the name in quotes), and must be unique (it must not be in use by other DriveMap users).
SOCKET=*nnnn*	Default: 4242. Range: 4000 - 5000.
PROTECT=*n...n* or ALL	Prevents others from mapping to some or all of your drives and printers. Substitute drive letters or parallel printer ports for *n*.
UNPROTECT=*n...n* or ALL	Allows others to map to some or all of your drives and ports. Substitute drive letters or parallel printer ports for *n*.
PASSWORD=*password*	Allows other users who know your password to override the protected status you give to your drives and printers. Your password can be up to 24 alphanumeric characters.
/U	Unloads DriveMap from memory, severing any connections remote users might have with your drives and printers.
/R	Loads DriveMap as a resident program, bypassing the main menu. This allows other DriveMap users to map to any of the drives or printers you have made available.

Option	Description
+ or -LPT*n*	Enables or disables communication along a parallel cable connection, where *n* is 1 or 2 only.
+ or -COM*n*	Enables or disables communication along a serial cable connection, where *n* is 1 or 2.
+ or -SPX	Enables or disables communication on a Novell network.
+ or -NETBIOS	Enables or disables communication on a NetBIOS network.
/INSTALL	Causes DriveMap to display the Install dialog boxes during startup.

NOTE *There are additional command-line options that you can use to control program display and mouse operation. See the* Global PC Tools Command-Line Options *chapter in* Part 4 General Reference *or type* `UNDEL /VIDEO`.

The following example shows a command line for loading DriveMap:

NOTE *The following sample command-line is a single, unbroken line of text that has "wrapped" due to the layout confines of this manual.*

```
drivemap name="Ted's 386" unprotect=all protect=ac123
password=rose /r +spx
```

In this example:

- This PC is named *"Ted's 386."* Notice the quotes needed to enclose a name that includes spaces.
- The unprotect and protect parameters make all drives available for mapping except drive A, drive C, and the ports LPT1, LPT2, and LPT3.
- A password (rose) is included.
- The `/r` parameter loads DriveMap as a resident program, bypassing DriveMap's user interface.
- The `+spx` parameter specifies that this PC is on a Novell network.

Directory Maintenance

Directory Maintenance makes it easy to navigate and maintain directories on local or network drives, no matter how complex the directory structure.

Here's what you'll find in this chapter:

- **Starting Directory Maintenance** explains how to start the program.
- **Changing Directories** explains how you can change to any directory by typing just part of its name.
- **Changing Drives** explains how to change drives.
- **Rereading the Directory Tree** explains how to prompt Directory Maintenance to display changes to the directory structure.
- **Changing the Tree Data Display** explains which options you can select for displaying information about the tree.
- **Viewing the File List** shows you how to see the names of files in a selected directory.
- **Viewing the Branch Size** explains how to see how many bytes a directory and its subdirectories contain.
- **Printing the Directory Tree** explains how to print a listing of the directory.
- **Changing the Volume Name** explains how to change the label assigned to this disk, which appears when you use the DOS DIR or CHKDSK command.
- **Making a Directory** explains how to make a new directory.
- **Renaming a Directory** explains how to give a directory a new name.
- **Deleting a Directory** explains how to delete a directory, all of its subdirectories, and any files they contain—all with a single command.
- **Copying Directories** explains how to copy entire directories, with files.
- **Moving Directories (Prune and Graft)** explains how to "prune" a directory from its location in the directory tree and move or copy it into a different one—even on a different drive.
- **Modifying Directory Attributes** explains how to see or change a directory's hidden or system attributes.
- **Viewing Network Rights** explains how to view your access rights for a network directory.

- **Command-Line Options** explains how to perform all directory maintenance functions quickly and easily from the DOS command line.

The program can only maintain directories on network drives if you are using Novell NetWare 286 version 2.10 or later.

Starting Directory Maintenance

▶ Choose **DM Program** from the Disk menu in PC Tools Desktop.

or

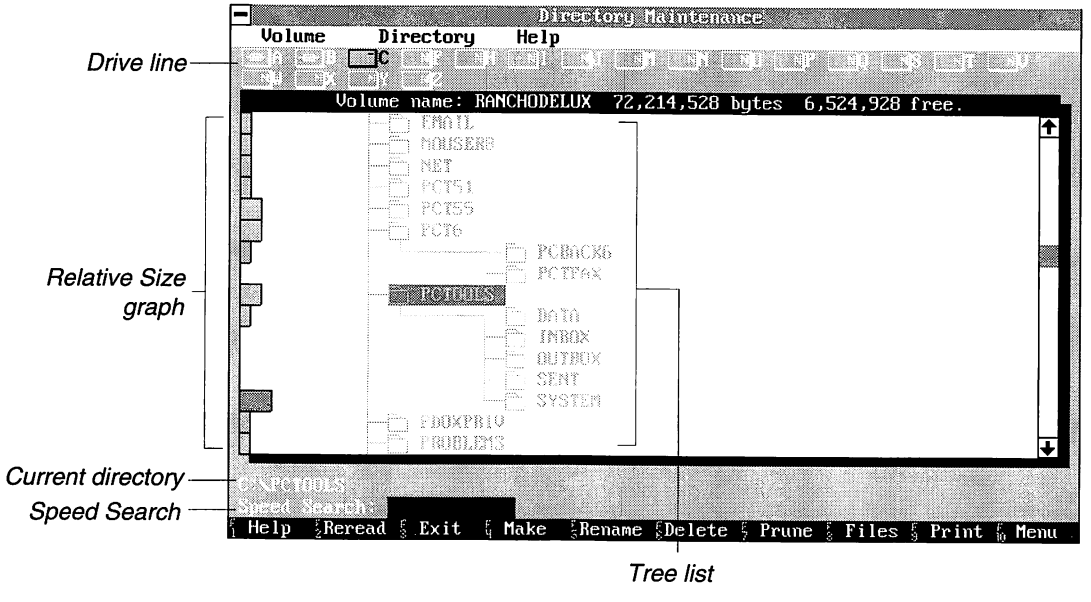
From DOS, type

DM Enter

If this is the first time you've used Directory Maintenance, the program takes a few moments to read the directory information for the current drive.

(You can change the drive being read by pressing a different drive letter. Directory Maintenance will then start reading that drive. For example, if the program was taking a long time to read a large network server, you could press C to tell it to read your local hard drive instead.)

The Directory Maintenance window appears.



What You See

Drive line: Shows the currently selected drive.

Relative Size graph: Indicates the size of the directory relative to the largest directory on the drive. You can use the Tree Data Display command on the Volume menu to display directory size in this space instead.

Current directory line: Displays the path name of the highlighted directory.

Speed Search: Lets you find a directory quickly by typing only a few letters of its name.

Tree list: Shows a graphical representation of all directories on the current drive. When you start the program, the directory from which you started it is highlighted. The current directory in DOS is identified by a different color than the other directories

Function Keys

The following function keys are available in Directory Maintenance:

Function Key	Description
F1 Help	Displays online help.
F2 Reread	Rereads the directory tree.
F3 Exit	Exits from Directory Maintenance.
F4 Make	Makes a directory.
F5 Rename	Renames a directory.
F6 Delete	Deletes a directory.
F7 Prune	Moves a directory ("prune and graft").
F8 Files	Lists the files in a directory.
F9 Copy	Copies a directory.
F10 Menu	Activates the horizontal menu bar.

Changing Directories

You can use Directory Maintenance as an alternative to the DOS CD (change directory) command. You don't have to type the whole name of a directory to change to it—no matter how deeply it is nested in the directory tree.

1. Begin typing the name of the directory you want to change to.

   As you type, the highlight bar in the directory tree moves to the first directory that matches the letters you've typed so far.

   - To move to the next match, press →.

     or

     To move to the previous match, press ←.

2. When the highlight bar is on the directory you want, press Enter.

   You exit from the program and are in the directory you selected.

   or

- Double-click the directory name with the mouse.

  You exit from the program and are in the directory you selected.

Changing Drives

On the drive line, click the drive you want to select, or press Ctrl and the drive letter.

If this is the first time you've selected this drive, the program takes a few moments to read the directory information. The directory tree for the new drive then appears in the directory tree.

Rereading the Directory Tree

The first time you start Directory Maintenance or select a particular drive, the program scans the directory structure of the current or selected drive and records this information in a file named CPS*x*.TRE for a local drive (where *x* is the drive letter) or CPS*nnn*.TRE for a network drive, where *nnn* is a number that stands for the network drive. For example, the information for drive C is stored in CPSC.TRE. This file is stored in the directory where Directory Maintenance is installed.

Thereafter, whenever you start the program, the program checks this file. This saves time, since it's quicker to read the file than it is to reread the drive each time.

NOTE *To keep this information up to date, you should use the* **Reread Tree** *command whenever you have used DOS to make or remove a directory. You should also use this option after using an installation program that creates a directory to hold the application it's installing.*

If you always use Directory Maintenance to make, rename, and delete directories, it's not necessary to use Reread Tree.

▶ Choose **Reread Tree** from the Volume menu or press F2.

Changing the Tree Data Display

When you first start Directory Maintenance, the Linear Bar Graph appears to the left of the tree list. It indicates the size of each directory relative to the largest directory on the drive.

Use Tree Data Display from the Volume menu to display other information in this space instead of the Relative Size Graph.

1. Choose **Tree Data Display** from the Volume menu.
2. Select one of the following options and then choose **OK**.

   None: No graph is shown.

   Bar Graph - Linear: Shows the relative size graph, on a normal scale, for each directory. This is the default option.

   Bar Graph - Exponential: Shows a relative size graph on a logarithmic scale. This allows you to see relative sizes if one directory is much bigger than the others. Select this option if you use a disk compression driver such as Stacker or SuperStor.

   Size: Gives the size in kilobytes for each directory. Because this is the physical space taken up by the directory (not the sum of the file sizes), this may be more than the amount shown by the DOS DIR command.

   Creation Date: Shows the date each directory was made. You can use this option only on a Novell network drive.

   Owner: Shows who created each directory. You can use this option only on a Novell network drive.

   Rights: Shows the rights that you have to each directory. You can use this option only on a Novell network drive.

Viewing the File List

Use the Show Files command to see a list of the files in the currently selected directory.

1. Choose **Show Files** from the Directory menu or press F8.

   A scrollable window, containing a list of the files in the current directory is opened on the right side of the window. The total size of files in the current directory is shown in the title bar of the window.

2. To close the window, press Esc or click anywhere outside of it.

Viewing the Branch Size

Use the Branch Size command to see the size of the selected directory branch, including all of the directory's files and subdirectories.

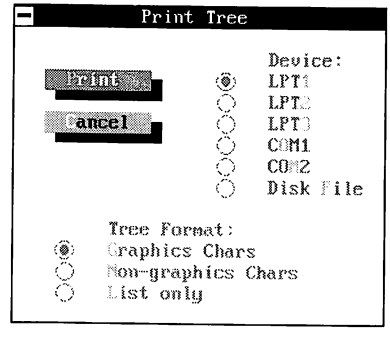
- Choose **Branch Size** from the Directory menu.

  A dialog box lists the total size of files in the branch and the total allocated disk space taken up by the branch. (The two numbers differ because DOS reserves a minimum size for each file on the disk and the unused portions add up.)

Printing the Directory Tree

The Print Tree command prints the current drive's tree structure (with or without graphics characters), or just a list of the directories on that drive.

1. Choose **Print Tree** from the Volume menu.
2. Choose the print options from the Print Tree dialog box.



Device: Lets you specify which printer port to send the report to. If you select **Disk File**, it will be saved as TREELIST.PRN in the directory where Directory Maintenance is installed.

Tree Format: Lets you choose the type of characters to use in printing the report. Non-graphics characters, such as hyphens, are not as attractive as graphics characters, but they will print properly on all printers. Select **List Only** if you just want a text list of the directory names.

NOTE *To print the tree list using graphics characters, the printer must be using a font that supports the standard extended ASCII character set, which includes characters used to draw lines and boxes. See your printer manual for details.*

3. Choose **Print**.

Changing the Volume Name

Every disk can have a label that is up to 11 characters long. You see the volume label when you use the DOS CHKDSK and DIR commands. It also appears at the top of the directory tree in Directory Maintenance.

1. Choose **Rename Volume** from the Volume menu.
2. Type the new name for this disk.

   Leave the volume name blank to have no volume name for this drive.
3. Choose **OK**.

Making a Directory

Use the Make Directory command to make a new directory. It is the same as the DOS MD (make directory) command.

1. Select the directory to which you want to add a subdirectory. For example, if you wanted to add C:\GAMES\CHESS, you would highlight C:\GAMES.
2. Choose **Make Directory** from the Directory menu or press F4.
3. Type the name of the new directory in the dialog box. (In the example, you would type CHESS.)
4. Choose **OK**.

Renaming a Directory

Use the Rename Directory command to change the name of an existing directory.

1. Select the directory you want to rename.

NOTE *You cannot rename the root directory.*

2. Choose **Rename Directory** from the Directory menu or press F5.
3. Type the new name of the directory.
4. Choose **OK**.

Deleting a Directory

Use the Delete Directory command to delete a directory, its files, and all its subdirectories.

1. Select the directory you want to delete.

WARNING This command will delete all files and subdirectories in the selected directory. Use it with care.

2. Choose **Delete Directory** from the Directory menu or press F6.
3. If the directory is not empty, you will be asked to confirm that you want to delete its contents.

NOTE *You can't delete the root directory of a bootable (system) disk.*

4. Choose **OK** to confirm the deletion.

Copying Directories

Use the Copy Directory command to copy a directory, along with all of its files and subdirectories, to a new position in the directory tree. The original directory is not affected.

NOTE *If VSafe or VWatch is resident in memory and you try to copy a directory which contains a file that may be infected by a virus, Directory Maintenance lets you know.*

1. Select the directory you want to copy.

   The selected directory and any subdirectories are highlighted.

2. Choose **Copy Directory** from the Directory menu or press F9.

3. If you want, select a different destination drive from the drive line by clicking the drive or pressing Ctrl and the drive letter.

   The directory tree for the selected drive appears.

4. Position the directory in the location you want, either with the arrow keys or by clicking and dragging it with the mouse.

   Use Home and End to position the directory at the top or bottom of the directory tree. Use Pg Up and Pg Dn to move it up or down a screen at a time.

   To cancel, press F3 or Esc.

5. Press F9 or double-click when the directory is where you want it.

6. Choose **OK** to confirm the position of the highlighted directory. (No change is made to the directory structure on the disk until you do this.)

Moving Directories (Prune and Graft)

Use the Prune and Graft command to move a directory, along with all its files and subdirectories, to a new position in the directory tree.

NOTE *If VSafe or VWatch is resident in memory and you try to graft a directory that contains a file that may be infected by a virus, Directory Maintenance lets you know.*

1. Select the directory you want to move.

   The selected directory and any subdirectories are highlighted.

2. Choose **Prune and Graft** from the Directory menu or press F7.

3. If you want, select a different destination drive from the drive line by clicking the drive or pressing Ctrl and the drive letter.

   You see the directory tree for the selected drive.

4. Move the directory to the location you want, either with the arrow keys or by clicking and dragging it with the mouse.

   Use Home and End to position the directory at the top or bottom of the directory tree. Use Pg Up and Pg Dn to move it up or down a screen at a time.

   To cancel, press F3 or Esc.

5. Press F7 or double-click when the directory is where you want it.

6. Choose **OK** to confirm the new position of the highlighted directory. (No change is made to the directory structure on the disk until you do this.)

Modifying Directory Attributes

1. Select the directory whose attributes you want to change.

WARNING You should not change the attributes of copy-protected directories or system directories. Changing these attributes can result in programs not running or your hard disk not booting.

2. Choose **Modify Attributes** from the Directory menu.
3. Select an attribute to apply to this directory and choose **OK**.

Attribute	What It Does
System	Makes a directory containing system files "invisible" so that it is not listed when you enter the DOS DIR command. You can see system directories using Directory Maintenance, however. (This attribute is not normally used.)
Hidden	Makes the directory "invisible" so that it is not listed when you enter the DOS DIR command. You can see hidden directories using Directory Maintenance, however. Hidden directories are not moved by a disk-optimizing program such as Compress.

The Archive and Read-Only attributes have no effect; therefore, they are not available.

Viewing Network Rights

You can use the Network Rights command to view your access rights for a Novell network directory. This command is only available for a Novell network drive.

Access or security rights are important on a network to control the types of actions that can be performed in a directory or file. For example, you might want to restrict the ability of other users to modify your data files or to remove directories that you have created.

1. Choose **Network Rights** from the Directory menu.

   You see your access rights in that directory. See the following table for a list of Novell network rights.

2. Choose **OK**.

NetWare 386 Access Rights

The following access rights apply to servers that are running NetWare 386:

Access Right	What You Can Do
Read	Open files and read their contents; copy files to other directories.
Write	Change the contents of files in this directory.
Create	Create subdirectories and files; copy files into this directory.
Erase	Delete empty directories.
Modify	Change attributes; rename subdirectories and files.
File Scan	See files and subdirectories.
Access Control	Assign and change security rights for this directory.
Supervisor	Exercise all rights in a directory and its subdirectories.

NetWare 286 Access Rights

The following access rights apply to servers that are running NetWare 286:

Access Right	What You Can Do
Read	Read information in files in this directory.
Write	Change the contents of files in this directory.
Open	Open existing files in this directory.
Create	Create new files in this directory.
Delete	Delete existing files.
Search	Search this directory for file names.
Modify	Change a file's attributes.
Parental	Assign and change security rights for this directory.

Command-Line Options

You can use Directory Maintenance without using the Directory Maintenance window by typing one of the following commands at the DOS prompt:

```
DM [d:] [/R] [directory] [MD path] [DD path]
   [RV name] [RN oldpath newndir]
   [CO sourcepath targetpath]
   [PG prunepath graftpath] [MA path HS]
   [/?] [/VIDEO]
```

/R is the only option that can be used with another option; all other options must be used separately. *path* includes the drive letter if not referring to the current drive.

NOTE *There are additional command-line options that you can use to control program display and mouse operation. See the* Global PC Tools Command-Line Options *chapter in* Part 4 *in this volume or type* `DM /VIDEO`.

Option	Description
d:	The drive to change to before you use another Directory Maintenance command. This prevents the program from taking the time to read the directory tree if the current drive is a network drive.
directory	The directory to change to. You don't have to type the entire directory name. To find the next match in the directory tree, repeat the command.
MD *path*	Makes the directory. Type the entire path name.
DD *path*	Deletes the directory, all the files in it, and any subdirectories it contains. Type the entire path name.
RV *name*	Changes the volume name (label) of the current drive. If volume name contains spaces, enclose in double quotes (" ").
RN *oldpath newdir*	Renames the directory. You have to type the entire path name for the old name, but only the directory name for the new name.
CO *sourcepath targetpath*	Copies the source directory and makes it a subdirectory of the target directory. Type the entire path name of both directories, including a drive letter, if you want.
PG *prunepath graftpath*	Moves the "prune" directory and makes it a subdirectory of the "graft" directory. Type the entire path name of both directories, including a drive letter.

Continued

Option	Description
MA *path* HS	Changes the specified attributes of that directory. You have to type the entire path name. "H": Hidden or "S": System. Any attributes not specified will be removed.
/R	Rereads the directory tree for the current drive and updates the tree file. Use this option after you've used the DOS MD or RD commands.
/?	Displays command-line help for Directory Maintenance options.
/VIDEO	Displays command-line help for Directory Maintenance program display and mouse options.

Examples

```
DM TAKE
```

This command changes to the directory \MEGABUCK\CORP \ACCOUNT on the current drive. Notice that it's not necessary to type the entire path or name of the directory you're changing to.

If there is more than one directory on the current drive whose name begins with "ACC," you would go to the one closest to the top of the directory tree. You might need to repeat the command to get to the directory you really want.

The directory tree must be up to date for the current drive for this option to work. If you're not sure, include the /R option.

```
DM MD \BIN\GAMES
```

This command creates a subdirectory \GAMES in the existing directory \BIN.

```
DM DD \1978\DISCO
```

This command deletes the directory \1978\DISCO, along with all the files and subdirectories it contains. (It will not delete files or other subdirectories in \1978.)

```
DM RV JAWS
```

This command changes the label on the current volume from whatever it was to "JAWS."

```
DM RN \BIN\GAMES UTILS
```

This command renames \BIN\GAMES to \BIN\UTILS.

```
DM PG \LETTERS \WORD
```

This command moves \LETTERS to \WORD\LETTERS.

```
DM MA \DATA H
```

This command hides the directory \DATA. If there were any other attributes set for \DATA, such as read-only, they are removed.

FileFind

Use FileFind to locate individual files or groups of files and to manipulate groups of files that span multiple drives and directories.

You can make your search as broad or as narrow as you need. For example, you can find every file on multiple drives; or you can find just those Microsoft Word files that have been created within the last week, are larger than 10K, and contain the word "inventory."

Here's what you'll find in this chapter:

- **Starting FileFind** explains how to start the program and the parts of the FileFind window.
- **Searching for Files** explains how to find a specific file or files with similar names, no matter what drive they are on, as well as files that contain a certain word or phrase. This section also explains how to find files that were created within a certain range of dates, or that are a certain size, or that have certain file attributes (such as hidden files or read-only files).
- **Searching for Duplicates** explains how to find files across multiple drives with the same name, name and date, or name, date, and size.
- **Using the Matching Files List** explains how to work with files located in the File List.
- **Using Search Groups** explains how to save the search specifications for files you need to locate on a regular basis. Install automatically creates search groups for most applications on your hard drives.
- **Narrowing your Search with Filters** explains how to search by and modify all Novell file attributes, all additional date ranges, file owner, and last modifier.
- **Working with Selected Files** explains how to delete, rename, move, copy, or change attributes of individual files or groups of files, even if they are located in different directories or on different drives.
- **Command-Line Options** explains the command-line options for FileFind.

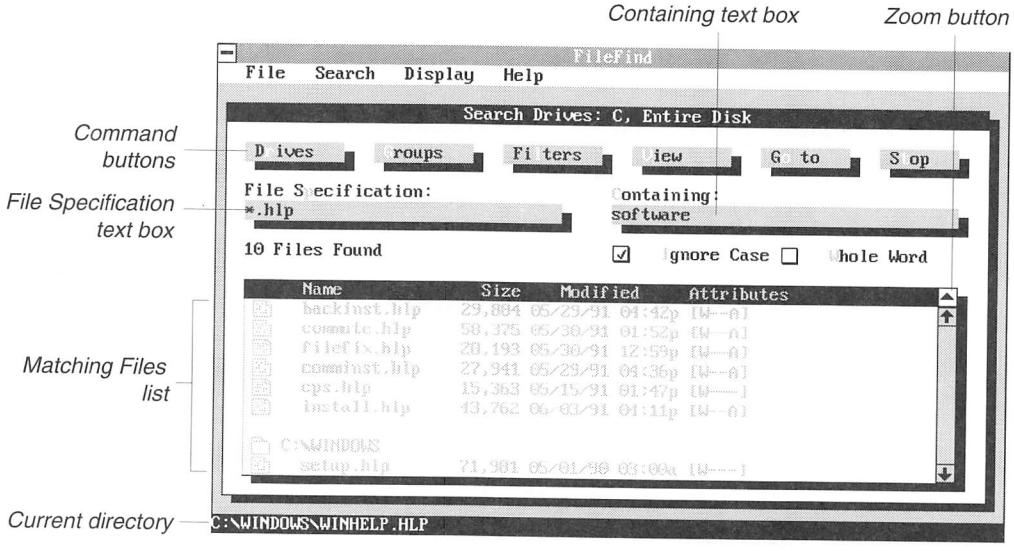
Starting FileFind

- Choose **Locate** from the File menu in PC Tools Desktop.

  or

  From DOS, type

  FF Enter



What You See

File Specification text box: Lets you enter the name of the file or files you're searching for, using the DOS wildcard characters * and ?.

Containing text box: Lets you enter a text string. The program will only find files that contain that string.

Matching Files list: Shows the files found by the program. You can use the List Format command from the Display menu to control the information this window contains and the Sort By command to control the order in which the files appear. You can also print its contents.

Zoom button: Lets you use the mouse to resize the Matching Files list. You can also resize the list by typing Alt Z.

Current directory line: Displays the directory currently being searched. If there is a file highlighted in the Matching Files list, this line displays the directory it's in. Otherwise, it displays the directory from which you started FileFind.

Command buttons: Provide quick access to commonly used menu commands.

Button	Menu Command	Description
Drives	**Selected Drives (Search menu)**	Lets you select the drives and directories to search.
Groups	**Groups (Search menu)**	Lets you select or maintain search groups.
Filters	**Filters (Search menu)**	Lets you narrow your search criteria.
View	**View File (File menu)**	Lets you view files in their native format.
Go to	**Go to Directory (File menu)**	Exits from FileFind and changes to the directory containing the currently selected file.
Start/Stop	**Start (Search menu)**	Begins searching for files that match the criteria you have set.

Searching for Files

You can search for files by name or content and search selected drives and directories.

Searching for a File by Name

1. Enter the file specification that describes the file(s) you want to find.

   You can include more than one specification, separating each by a space. For example, enter `*.EXE *.COM` to include all program files.

   You can exclude files by prefacing a file specification with a minus sign. For example, enter `*.BAT -\*.BAT` to include all batch files except those in the root directory.

   For more information about file specifications, see the chapter, *Working in the PC Tools Environment* in *Part 1 Getting Started*.

   - Use ← and → to move the cursor one character right or left, and Home and End to position the cursor at the beginning or end of the entry.
   - To insert characters, scroll to where you want to insert them, press Ins and type the additional characters. To delete text, position the cursor on the character to be deleted and press Del.

2. To start the search, choose **Start**, or press Enter with the cursor in the File Specification text box.

   As the program finds the files that match your search criteria, they are listed in the Matching Files list, where you can select the ones you want to manipulate.

   You can print the list, change the order the files are displayed in, and change the information displayed for each file. See "Using the Matching Files List" later in this chapter for details.

Interrupting the Search

- Choose **Stop**.

  or

  Press Esc.

  The search is interrupted, and you can choose whether or not to continue it. Any files found before you interrupted it will appear in the Matching Files list.

Searching by File Contents

You can use file specifications and file contents together to narrow your search.

For example, if you entered the file specification `*.DOC` and you enter `budget` in the Containing text box, the program will find all Microsoft Word files that contain the word "budget."

NOTE *Searching files for text on a Novell network does not affect the searched files' last access date.*

1. Enter the text to search for in the Containing text box.
2. Select the search options.

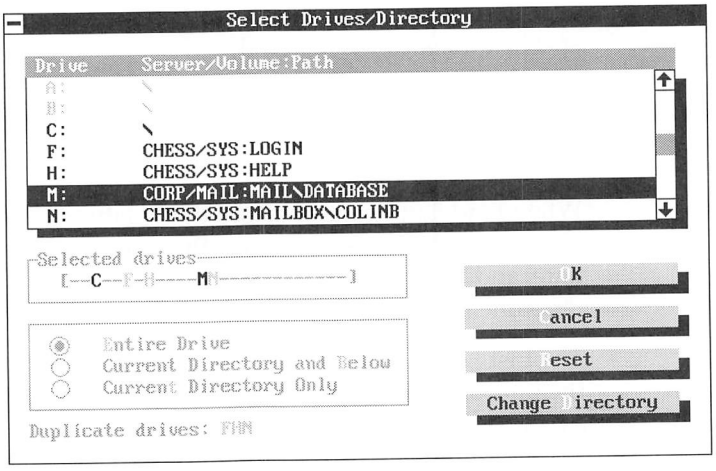
   Ignore Case: Finds files containing the text whether it is upper or lowercase. For example, if you type `CHOCOLATE`, the program will find files containing "Chocolate," "chocolate," and "ChocoLate."

   Whole Word: Finds only the text you enter if it is one or more complete words. For example, if you type `tort`, the program will not find "tortellini" or "retorted."

Selecting Search Drives and Directories

As a default, FileFind searches the entire current drive for the files you specified. You can narrow the search to a particular directory, or to broaden it to include additional drives.

1. Choose **Drives**.



2. In the scrolling drive box, select the drives to search by pressing the drive letter or clicking with the mouse.

   As you do so, the drive letters appear in the Selected Drives box.

   Novell network drives that are mapped to the same physical volume appear in the same color in the Selected Drives box, and are listed at the bottom of the dialog box as "Duplicate Drives." This keeps you from inadvertently searching the same volume more than once.

3. Select a directory search option.

   Entire Drive: Searches all directories on the selected drive(s).

   Current Directory and Below: Searches only the current default directory and its subdirectories on each of the selected drive(s).

   Current Directory Only: Searches only the current default directory on each of the selected drive(s).

4. To change the current default directory for a drive, select that drive and choose **Change Directory**.

   Enter the path name of the new default directory (don't enter a drive letter), and choose **OK**.

5. Choose **OK.**

   or

   To return to the default search settings, choose **Reset.**

Searching for Duplicates

When Find Duplicates is selected from the Search menu, the program finds groups of two or more files with the same name that match the file specifications you've entered.

For example, you might use this option to find duplicate copies of a particular file. You could then view each one, decide which one you want to keep, then delete the rest to free up disk space.

When Find Duplicates is selected, the Filters command determines whether files must have the same name, the same name and date, or the same name, date, and time to be considered duplicates. (By default, duplicates must have the same name and date.)

The List Format and Sort By commands on the Display menu (which control the information displayed and list order in the Matching Files window) are not available while Find Duplicates is selected.

1. Choose **Find Duplicates** from the Search menu.

   A check mark next to the option indicates that it is turned on.

   The Duplicate Search Status panel appears in the FileFind window. Once the search is underway, this panel will inform you of its progress.

2. Enter the file specification that describes the file(s) you want to find.

3. If you want, choose the **Drives** button to specify the drives and directories to search for duplicates.

4. If you want, choose the **Filters** button to change the duplicate criteria, then choose **OK**.

   Name: Finds groups of files with the same name.

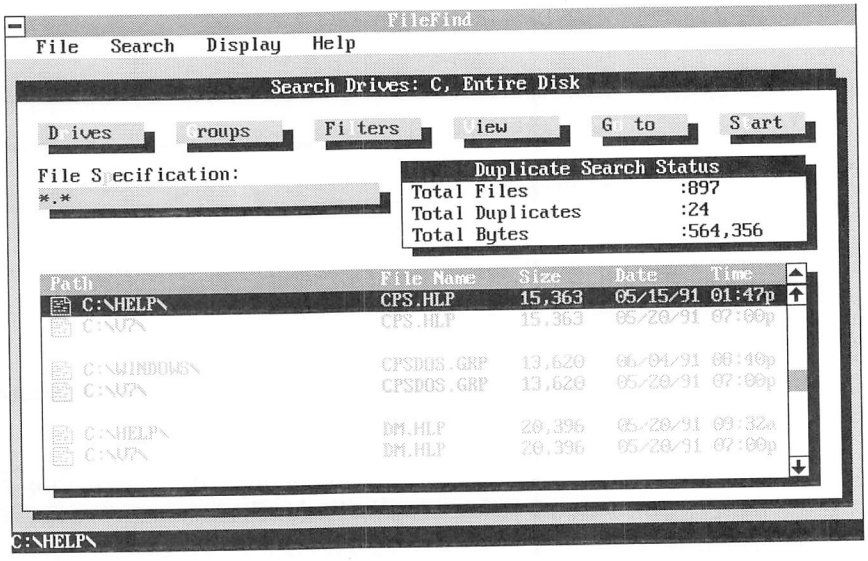
   Name, Size: Finds groups of files with the same name and size.

   Name, Size, Date: Finds groups of files with the same name, size, and date.

5. To start the search, choose **Start**.

During the Duplicate Search

As the program finds duplicate files that match your specifications, the values in the Duplicate Search Status panel change.



Total Files: The number of files the program has checked.

Total Duplicates: The number of duplicate files it has found.

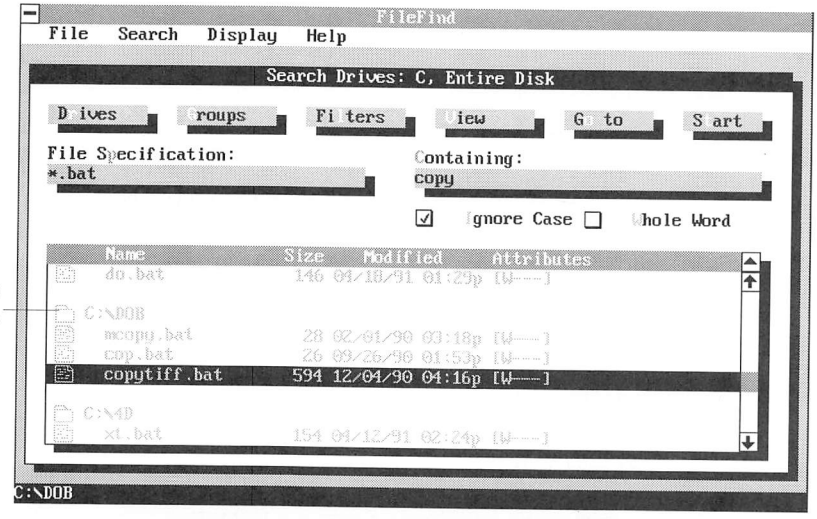
Total Bytes: The total size of all duplicates found.

When the search is complete, the program shows you a series of informational messages as it sorts the list of duplicates. The names of the duplicates then appear in the Matching Files window.

Files are sorted by file name in ascending order. The location, name, date, and size appear for each file.

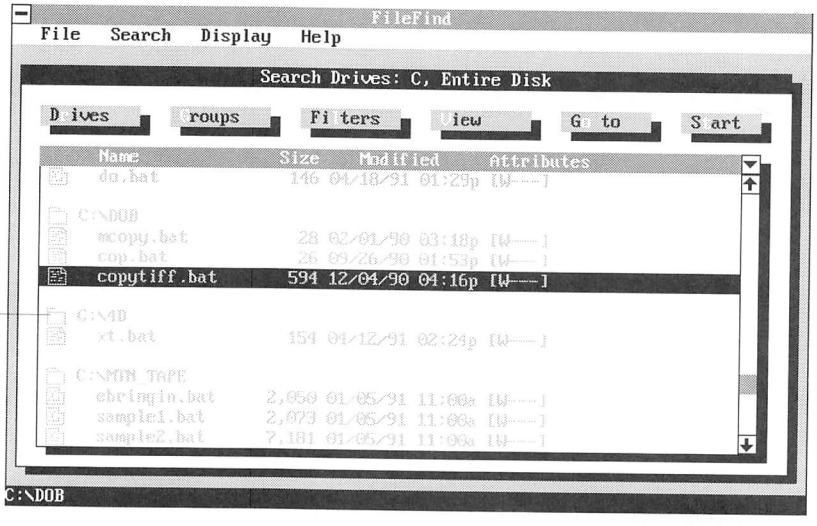
Using the Matching Files List

When you first start FileFind, the Matching Files window is *unzoomed*, which means that it covers the lower part of the FileFind window.



Unzoomed Matching Files list

When you zoom the Matching Files window, it covers the File Specification and Containing text boxes, so that more files are visible in the Matching Files list. Even when you can't see these text boxes, however, their contents are still in effect.



Zoomed Matching Files list

Zooming or Unzooming the List

- Choose **Zoom** from the Display menu, or click the zoom box, or press Alt Z.

Selecting File(s)

To	Do This
Select a single file	Move the highlight bar to the file and click the left mouse button, or press Enter or Spacebar. The selected file changes color. You can select more than one file this way.
Select or unselect a group of files with the mouse	Press and hold the right mouse button, position the highlight bar over the first file, then also press and hold down the left mouse button. Drag the cursor over any additional files you want to select or unselect. Release both mouse buttons when finished.
Select all files	Choose **Select All** from the File menu.
Unselect all files	Choose **Deselect All** from the File menu.

Controlling Information Displayed in the List

1. Choose **List Format** from the Display menu.
   (This option is not available when **Find Duplicates** is selected.)
2. Select the types of information you want to appear in the Matching Files list.
3. Choose **OK**.
   or
   Choose **Reset** to return to the default settings.

Changing the Order of Files in the List

1. Choose **Sort By** from the Display menu.
   (This option is not available when **Find Duplicates** is selected.)
2. Select the information to sort by.
3. Select whether you want the order to be ascending (A–Z, smallest to largest, or earliest to latest) or descending (Z–A, largest to smallest, or latest to earliest).

4. Choose **OK**.

   or

   Choose **Reset** to return to the default settings.

Printing a List of Files in the Matching Files List

1. Choose **Print List** from the File menu.
2. Select the information to include in the report.
3. Choose whether you want to send the report to a printer or to a file.

If you Print to	Then
A printer	The report will be sent to the printer port LPT1.
A file	Enter the location and name for the file; otherwise, the file is saved in the directory where FileFind is installed under the name FILELIST.TXT.

4. If your printer can print compressed text, enter the number of rows and columns of text you want to appear on each page of this report.
5. Choose **OK**.

Using Search Groups

If you search for a certain group of files on a regular basis, you can name the group specifications and save them for future use.

Install creates search groups for all applications found on your hard drive(s). You can edit or delete these groups to suit your needs.

Search groups that you create in FileFind are available to you in Undelete, and vice versa.

Searching for a Group of Files

1. Choose **Groups** in the FileFind window.
2. Select the group(s) from the Search Groups dialog box and choose **OK**.

   The specification for the group(s) you selected appears in the File Specification text box. If you selected more than one group, all of their specifications appear in the text box separated by spaces.
3. If you want, choose **Drives** to specify the drives and directories to search.

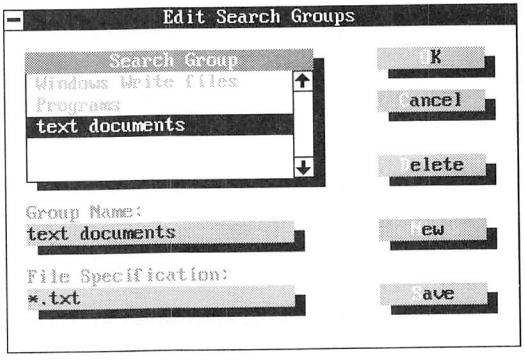
   You can also select **Filters** to narrow your search to files with certain attributes, such as sizes and dates.

4. Choose **Start**.

   The group(s) you selected remain in effect until you change the file specification or leave the program.

Adding a Search Group

1. Choose **Groups** in the FileFind window.
2. Choose **Edit**.



3. Choose **New**, and enter a group name and file specification.

   Enter a file specification that describes the names and location of the files. For example, if all your Microsoft Word files were located in C:\WORD and had the extension .DOC, you could enter the file specification `C:\WORD\*.DOC` to define a group called "Word Files."

   For more about entering file specifications, see the chapter, *Working in the PC Tools Environment* in *Part 1 Getting Started*.

4. Choose **Save**, then choose **OK**.

Editing or Deleting a Search Group

1. Choose **Groups** in the FileFind window.
2. Choose **Edit**.
3. Select the search group you want to edit or delete.
   - To edit a search group, change the group name, file specification, or both and choose **Save**.

     To delete a search group, choose **Delete**.
4. Choose **OK**.

5. To use this group for the next search, select it and choose **OK** in the Search Groups dialog box.

Narrowing Your Search with Filters

The Filters command lets you search for files by file size, date, or attributes, and, if you are logged on to a Novell network, by network attributes, dates, and owner information. Each filter you select is added to the others in effect; in order to be found, a file must satisfy all of the filter conditions you specify.

1. Choose **Filters** in the FileFind window.
2. If you're not running FileFind on a network and you want to search by file attributes, select the attributes you want to search for.

   or

   If you are running on a network and you want to search by file attributes, choose **Edit Attributes**.

   File attributes are defined at the end of this section.
3. Select **Only These Attributes** to find files that have exactly the attributes you've checked, and no other attributes.

   or

   Select **Including These Attributes** to find files that have all the attributes you've checked, as well as other attributes.
4. Select any additional options you want to search for.

   Owner: Includes only files owned by the user whose Novell network ID you enter here.

   Last Modifier: Includes only files accessed last by the user whose Novell network ID you enter here.

   Size: Includes only files whose size is within the range you enter here. Enter file sizes in bytes; it's not necessary to enter commas.

   Modified: Includes only files that have been modified during the span of time you enter here.

   The first text box in each pair is for the date, and the second one is for the time. The time is optional, however. Enter it in 24-hour clock format. For example, you would enter 5:00 pm as 17:00.

   Last Accessed: Includes only files that have been accessed during the range of dates you enter here. This option is only available on a Novell network.

Last Archived: Includes only files that have been backed up within the range of dates you enter here (if the backup program you use changes this date). This option is only available on a Novell network.

Creation Date: Includes only files created during the range of dates you enter here. This option is only available on a Novell network.

5. Choose **OK**.

   or

   Choose **Reset** to return to the default settings.

   The filter remains in effect until you unselect it in the Filters dialog box or leave the program.

File Attributes

The following table lists attributes that can be assigned to files and the corresponding code that appears in the Matching Files list. Some attributes are valid for files on both local and network drives, some are valid only for files on network drives using Novell NetWare 286 or 386, and others are valid only for files on a network server using NetWare 386.

Code	Attribute	Includes
On local or network drives:		
R (local) Ro (network)	Read-Only	Files that are protected from being modified, erased, or renamed.
W (local) Rw (network)	Writeable	Files that can be written to.
S (local) Sy (network)	System	The system files, which are "invisible" and are not listed when you enter the DOS DIR command. FileFind will display system files, however.
H	Hidden	Other files that are "invisible" and are not listed when you enter the DOS DIR command. FileFind will display hidden files, however.
A	Archive	Files that have been modified since the last backup. This attribute is used by the DOS BACKUP command and by Central Point Backup to determine which files to back up.

Continued

Code	Attribute	Includes
On network drives (using either Novell NetWare 286 or 386):		
I	Index	Files for which the network operating system maintains an index to facilitate quick lookup. This is typically used for large database files.
E	Execute-Only	Files that are prevented from being copied and can only be executed. Once set, this attribute cannot be removed.
S	Shareable	Files that can be accessed by more than one user at a time. This attribute is usually reserved for executable files or database files, but can be used for any file.
T	Transactional	Files that are protected with NetWare's Transaction Tracking System. This attribute is generally used to protect database files against data corruption.
RA	Read-Audit	Files for which reads are tracked.
WA	Write-Audit	Files for which writes are tracked.
On network drives (using Novell NetWare 386):		
C	Copy Inhibit	Files that are prevented from being copied.
D	Delete Inhibit	Files that are prevented from being deleted.
R	Rename Inhibit	Files that are prevented from being renamed.
P	Purge	Files that will be totally erased when they are deleted.

Working with Selected Files

You can perform a number of operations on selected files, such as viewing, copying, moving, deleting, renaming, and resetting attributes. (On any network, you must have the appropriate network rights to perform these tasks; otherwise, FileFind displays an error message.)

Changing to the Directory Where a File is Located

1. Select a file from the Matching Files List.
2. Choose **Go to** in the FileFind window.

   You exit from the program and are in the directory that contains the file you selected. (If no file or more than one file was selected, you go to the one that the highlight bar was positioned on.)

Viewing a File

1. Select one or more files from the Matching Files List.
2. Choose **View** in the FileFind window.

   The first selected file in the Matching Files list is loaded into the View program. If no files are selected, the highlighted file is loaded. For help on moving around the file, see the *View* chapter.
3. To see the next selected file, press F10 from within View.

   or

   To see the previous selected file, press F9.

Copying Files

1. Select one or more files from the Matching Files list.

   (If no files are selected, this command operates on the highlighted file.)
2. Choose **Copy** from the File menu.
3. Enter the destination for the first file and choose one of the following options:

   Copy: Copies the file displayed in the dialog box to the specified destination and goes to the next selected file (if any).

   Copy All: Copies all remaining selected files (if any) to the specified destination and exits from the Copy Files dialog box.

   Next: Skips to the next selected file (if any).

   Repeat this step until the files have been copied.
4. Choose **Cancel** to return to the FileFind window.

Renaming Files

1. Select one or more files from the Matching Files List.

   (If no files are selected, this command operates on the highlighted file.)

2. Choose **Rename** from the File menu.

3. Enter the new name for the first file and choose one of the following options:

   Rename: Renames the file displayed in the dialog box and goes to the next selected file (if any).

   Next: Skips to the next selected file (if any).

   Repeat this step until the files have been renamed.

4. Choose **Cancel** to return to the FileFind window.

Deleting Files

1. Select one or more files from the Matching Files List.

   (If no files are selected, this command operates on the highlighted file.)

2. Choose **Delete** from the File menu.

3. Choose one of the following options:

   Delete: Deletes the file displayed in the dialog box and goes to the next selected file (if any).

   Del All: Deletes all remaining selected files (if any) and exits from the Delete Files dialog box.

   Next: Skips to the next selected file (if any).

   Repeat this step until the files have been deleted.

4. Choose **Cancel** to return to the FileFind window.

Moving Files

1. Select one or more files from the Matching Files List.

   (If no files are selected, this command operates on the highlighted file.)

2. Choose **Move** from the File menu.

3. Enter the new location and, optionally, the new name for the first file and choose one of the following options:

Move: Moves the file displayed in the dialog box and goes to the next selected file (if any).

Next: Skips to the next selected file (if any).

Repeat this step until the files have been moved.

4. Choose **Cancel** to return to the FileFind window.

Setting File Attributes

1. Select one or more files from the Matching Files List.

   (If no files are selected, this command operates on the highlighted file.)

2. Choose **Set Attributes** from the File menu.

   The name of the first selected file and its current attributes are displayed at the bottom of the dialog box.

3. Select the attributes you want the files to have. File attributes are defined in the "Narrowing Your Search with Filters" section, earlier in this chapter.

4. Enter the other characteristics you want the files to have. These options are also discussed in "Narrowing Your Search with Filters," earlier in this chapter.

5. Choose one of the following options:

   Set: Changes the attributes of the file displayed in the dialog box and goes to the next selected file (if any).

   Set All: Changes the attributes of all remaining selected files (if any) and exits from the Set Attributes dialog box.

   Next: Skips to the next selected file (if any).

6. Repeat steps 3–5 until the files have been changed.

7. Choose **Cancel** to return to the FileFind window.

Command-Line Options

You can search for files without going through the FileFind dialog boxes and menu commands by using the following syntax at the DOS prompt:

```
FF [drivelist] [+ or -]filespec
   [filespec...] [searchtext [/CS] [/WW]]
   [/ALL] [/CO or /CB]
   [[/A+ or /A-] [/R+ or /R-] [/H+ or /H-]
   [/S+ or /S-] or /CLEAR]
   [[/Dmm-dd-yy] [/Thh:mm:ss] or /CURRENT]
   [F:filename] [/?] [/VIDEO]
```

drivelist, *filespec*, and *searchtext* must be the first options and must be used in that order.

NOTE *There are additional command-line options that you can use to control program display and mouse operation. See the* Global PC Tools Command-Line Options *chapter in* Part 4 General Reference *or type* `FF /VIDEO`.

Option	Description
drivelist	Searches specified drives for files. Include the colon (for example, C:). Separate multiple drive letters with spaces. Default: search the current drive only.
filespec	Searches for any DOS file name. DOS wildcards * and ? can be used. To exclude files, preface file specification with minus sign (–). To include them, a plus sign (+) is optional. Separate multiple file specifications with spaces and enclose them in quotes—for example, "*.* -*.EXE."
searchtext	Is a word or phrase you want to search for (up to 42 characters). If text contains spaces, enclose it in quotes.
/ALL	Searches all drives for files, including network drives. This option must come after *filespec* and/or *searchtext*.
/CS	Makes the search case-sensitive (looks for exact matches to upper and lowercase letters). Requires the *searchtext* option.
/WW	Looks for only whole words that match the text string. Requires the *searchtext* option.
/CO	Searches the current directory only. If searching multiple drives, searches the current directory of all.

Continued

Option	Description
/CB	Searches the current directory and below. If searching multiple drives, searches the current directory and below of all.
/A+ or /A-	Sets or clears the archive attribute for found files.
/R+ or /R-	Sets or clears the read-only attribute for found files.
/H+ or /H-	Sets or clears the hidden attribute for found files.
/S+ or /S-	Sets or clears the system attribute for found files.
/CLEAR	Clears all attributes for found files.
/CURRENT	Sets the time and date of found files to the current system date and time.
/D*mm-dd-yy*	Sets the date of found files to mm-dd-yy.
/T*hh:mm:ss*	Sets the time of found files to hh:mm:ss.
F:*filename*	Saves list of found files to file name in current directory.
/?	Displays command-line help for FileFind options.
/VIDEO	Displays command-line help for FileFind program display and mouse options.

Examples

```
FF "*.* -*.EXE" "Sales Report" /F:SALES.TXT
```

This command searches the current drive for all files not ending in .EXE that contain the phrase "Sales Report." It then saves the list of found files in a text file called SALES.TXT in the current directory.

TIP *You can edit the list of found files to create a batch file that performs some operation on them.*

```
FF *.COM /CO /CURRENT
```

This command searches the current directory for files that end with .COM. It then sets their date and time to the current system date and time.

```
FF C:  D:  H:  W:  "*.COM *.EXE" /CB /R+
```

This command searches the current directory and below on drives C, D, H, and W for files that end in .EXE and .COM. It then sets their read-only attribute.

View

View allows you to display files generated by many popular applications—without starting the application or even knowing which application created the file. For example, when you choose to view a dBASE file, View automatically selects the proper viewer and displays the file approximately as it would appear in dBASE itself. (View is not a database program, so you can't use it to change or print the file.)

The types of files you can view include word processing files; spreadsheet files; database files; graphics files, such as those created in PC Paintbrush; binary files, which may contain executable code; and files created by archiving applications. See "Table of File Types" later in this chapter for a list of viewable file types.

Press F1 for the most up-to-date list of file viewers.

Here's what you'll find in this chapter:

- **PC Tools Programs that use View** lists the PC Tools programs that use View.
- **Table of File Types** describes the types of files you can view.
- **Starting View** explains how to start view and what you see.
- **Changing Files or Viewers** explains how to select another viewer or file to view.
- **Moving Around in the File** explains the navigation techniques for browsing a file.
- **Viewer Keystrokes** describes the keystrokes used for the specific viewers.
- **If a Viewer Does Not Work** explains how to set a variable to disable expanded or extended memory.
- **Command-Line Options** describes the View command-line options.

PC Tools Programs that Use View

You can start View from DOS, or you can run it from within the following PC Tools programs:

- **Undelete.** Look at deleted files before undeleting them.

- **FileFix.** View repaired files to determine how much of their data was recovered.
- **FileFind.** View the files you've found to confirm that they're the ones you wanted.
- **PC Tools Desktop.** View files before you copy, rename, or delete them. You can also launch the application associated with a file from PC Tools Desktop.
- **Central Point Backup.** View files to make sure that they're the ones you want to back up.

Table of File Types

The following file types can be displayed in an approximation of their native format. For a list of versions supported, press F1.

Database Viewers	Miscellaneous Viewers
dBASE	.ARC
Desktop Accessories Databases	Binary
Microsoft Works Database	LHARC
Paradox	.PAK
R:Base	PC Paintbrush (see note)
	PC Secure
	SEA archive
	.ZIP
	ZOO
Spreadsheet Viewers	**Word Processor Viewers**
Lotus 1-2-3	ASCII
Lotus Symphony	DCA Final Form
Microsoft Works Spreadsheet	DCA Revisable Form
Microsoft Excel	Desktop Accessories Notepads
Mosaic Twin	DisplayWrite
Quattro	MultiMate
Quattro Pro	Microsoft Windows Write
	Microsoft Word
	Microsoft Works
	Text
	WordPerfect
	WordStar
	XyWrite

You must have a CGA, EGA, VGA, or Hercules display to view PC Paintbrush (.PCX) files. In addition, you must have a high-resolution display to view .PCX files that were created using a high-resolution display.

Starting View

- Choose **Quick View** from the File menu in PC Tools Desktop.

  or

  From DOS, type

  `VIEW` Enter

  or

  `VIEW filespec` Enter

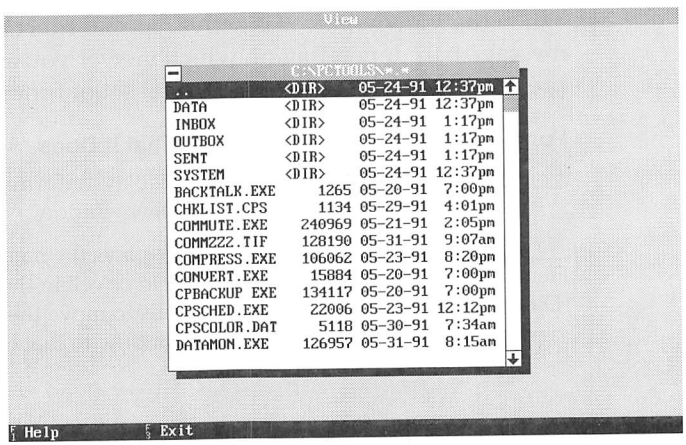
  where *filespec* is the drive, directory, and name of the file or files you want to view. (Omit the drive and directory if the file is in the current directory.) You can use the wildcard character * to specify a group of files.

  For example, you could type `VIEW A:\WORD\*.DOC` to select from a list of all files with the extension .DOC in the \WORD directory on drive A.

If you specified a single file when starting View, that file appears in the View window. Otherwise, you see a file list containing the files you specified. (If you started View without specifying a file, the file list contains all files in the current directory.)

Selecting a File from the List

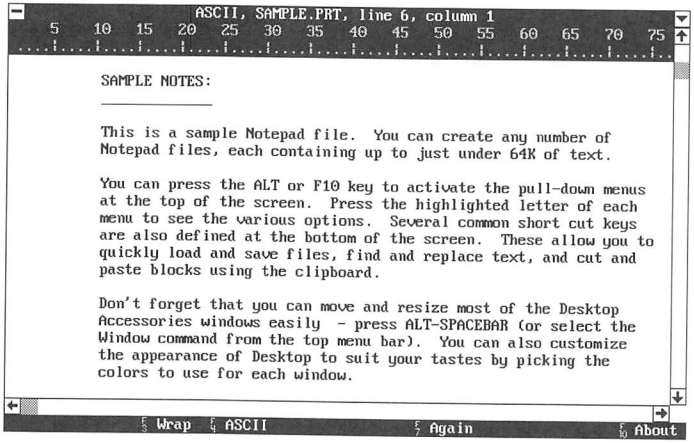
1. In the file list, move the highlight to the file you want to view first.



2. Select it by double-clicking or pressing Enter.

What You See

The View window appears, with the type of viewer identified in the title of the window. The program tries to use the correct viewer for the type of file you're viewing. If it does not recognize the file, it uses the binary viewer.


ASCII, SAMPLE.PRT, line 6, column 1
5 10 15 20 25 30 35 40 45 50 55 60 65 70 75
SAMPLE NOTES:
This is a sample Notepad file. You can create any number of Notepad files, each containing up to just under 64K of text.
You can press the ALT or F10 key to activate the pull-down menus at the top of the screen. Press the highlighted letter of each menu to see the various options. Several common short cut keys are also defined at the bottom of the screen. These allow you to quickly load and save files, find and replace text, and cut and paste blocks using the clipboard.
Don't forget that you can move and resize most of the Desktop Accessories windows easily - press ALT-SPACEBAR (or select the Window command from the top menu bar). You can also customize the appearance of Desktop to suit your tastes by picking the colors to use for each window.
F5 Wrap F6 ASCII F7 Again F10 About

If View was started from within Undelete, PC Tools Desktop, or FileFind and text to search for was specified, that text is highlighted. Press Shift F7 to view the next occurrence of this text in the file.

Function Keys

When the View window is active, special function keys are available on the message bar, depending on which viewer you are using. For some viewers, pressing Shift displays an additional set of functions.

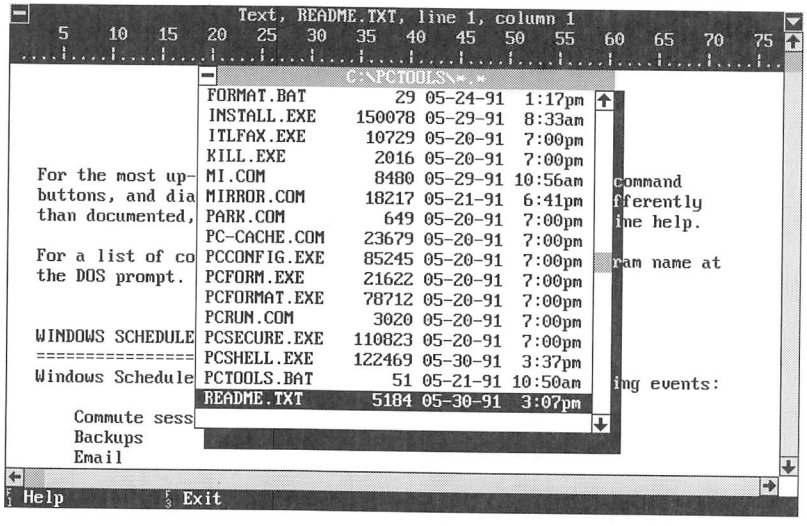
Function Key	What It Does
F2 Info	Displays information about the file in the View window.
Shift F2 Fields/Cells (Database and spreadsheet viewers only)	Displays the name, type, and length of each field or cell in the current file. Select a field or cells to move the highlight in the View window to that location.

Continued

Function Key	What It Does
F3 Exit	Closes the View window.
Shift F3 Wrap (Text viewer only)	Wraps text to fit in current window size. If text is wrapped, unwraps it.
Shift F3 Sheet (1-2-3 Rel. 3 viewer only)	Displays a list of all worksheets in the file being viewed.
Shift F3 Modes (Unzoomed .PCX viewer only)	Displays a list of video modes for PCX files.
Shift F3 All/Hex/ASCII (Binary viewer only)	Selects a view:All for all characters; Hex for hexadecimal numbers; and ASCII for printable characters.
Shift F3 Info (R:BASE viewer only)	Displays more detailed file information.
F4 Files (Only if started from DOS)	Displays the file list from which you can select a new file.
Shift F4 Tables (R:BASE viewer only)	Lets you view and select from a list of tables.
Shift F4 ASCII (text and ASCII viewer only)	Switches between these two modes
F5 GoTo	Lets you specify a line and column, field and record, or cell and row to go to in the file you are viewing.
F6 Viewers	Displays a list of available viewers from which you can select a new viewer for the current file.
F7 Search	Searches the viewed file for text.
Shift F7 Again	Looks for the next occurrence of the search text.
F8 Unzoom/Zoom	Unzoom shrinks the View window to a smaller size. Zoom returns it to its previous size.
F8 Graph (.PCX viewer only)	Switches between the graphic and text about the image size and resolution.
F9 Previous	Views the previous file (if any) in the group of files being viewed.
Shift F9 Browse/Record (database viewers only)	Toggles between record mode and browse mode.
F10 Next	Views the next file (if any) in the group of files being viewed.

Changing Files or Viewers

1. Press F4 to display the file list.



2. Select the file you want to view.

   The file that was in the View window is replaced with the one you've selected.

NOTE *The F4 Files option is only available when View is started from DOS. For instructions on selecting another file to view from within FileFind, Undelete, PC Tools Desktop, FileFix, or PC Backup, see the chapter for that program.*

Selecting a File in a Different Location

1. Press F4 to display the file list.
2. Within the list:

To Change to	Select
A different drive	Select the drive, which appears near the bottom of the file list.
A higher directory	Select the line with two periods on it.
A lower subdirectory	Select the directory name. Directory names are followed by <DIR>.

3. When you're in the right location, select the file you want to view.

Selecting a Different Viewer for the Current File

1. Press F6 to display the list of viewers.
2. Select a new viewer from that list.

   The file that was in the View window reappears using the viewer you selected. If the current file is not compatible with the viewer you selected, the program uses the binary viewer.

Moving Around in the File

Going to a Line, Record, or Row

1. Press F5 or click **GoTo** on the message bar.
2. Enter the line and column, record and field, or row and cell you want to go to in the text box.
3. Choose **OK**.

Searching for Text

1. Press F7 or click **Search** on the message bar.
2. Type up to 30 characters to search for.

   Case Sensitive: Finds only text that matches the capitalization of what you enter. For example, if you type `KUMQUAT`, the program will not find "Kumquat," "kumquat," or "KuMQuAt."

   Whole Word: Finds only the text you enter if it is one or more complete words. For example, if you type `tort`, the program will not find "tortellini" or "retorted."

NOTE *Press Esc at any time to stop the search.*

3. Choose **OK**.

   The first occurrence of the search text is highlighted. The program displays a message if the search text is not found.

4. Press Shift F7 to search for the next occurrence of the search text in the file.

Viewer Keystrokes

Use the following keystrokes to move around in the viewers:

Binary, Text, and Word-Processing Viewers

To Move	Press
Up one line	↑
Down one line	↓
Right one character	→
Left one character	←
Right 10 characters	Ctrl →
Left 10 characters	Ctrl ←
Up one screen	Pg Up
Down one screen	Pg Dn
To the top of the file	Ctrl Pg Up
To the bottom of the file	Ctrl Pg Dn
To the beginning of the line or file	Home
To the end of the line or file	End
Between the top and the bottom of a file	/

Spreadsheet Viewers

To Move	Press
Up one cell	↑
Down one cell	↓
Right one column/cell	→
Left one column/cell	←
Right one screen	Ctrl →
Left one screen	Ctrl ←
Up one screen	Pg Up
Down one screen	Pg Dn
To the top of the file	Ctrl Pg Up
To the bottom of the file	Ctrl Pg Dn
To the beginning of the row or spreadsheet	Home
To the end of the row or spreadsheet	End
Between the top and the bottom of a file	/

Database Viewers

This table shows how to move in Browse Mode (left) and Record Mode (center).

To Move (Browse)	To Move (Record)	Press
Up one record	Up one field	↑
Down one record	Down one field	↓
Right one field	Right one character	→
Left one field	Left one character	←
Right one screen	To the next record	Ctrl →
Left one screen	To the previous record	Ctrl ←
Up one screen	Up one screen	Pg Up
Down one screen	Down one screen	Pg Dn
To the top of a file	To the top of the screen	Ctrl Pg Up
To the bottom of a file	To the bottom of the screen	Ctrl Pg Dn
To the beginning of a row or a database	To the beginning of a record	Home
To the end of the row or the database	To the end of the record	End
Between the top and the bottom of a file	Between the top and bottom of a screen	/

Moving Around the File with the Mouse

You can use the mouse to move a file around in the View window just like you were moving a piece of paper around on your desk.

- Press the mouse button and drag the mouse.

  The file in the viewer scrolls in the direction you drag.

- Click on the scroll bar or drag the scroll box.

If a Viewer Does Not Work

If you use expanded or extended memory and a viewer does not work, you can prevent all the viewers from using expanded or extended memory. Type one of the following environment variable commands at the DOS prompt or add it to your AUTOEXEC.BAT file.

For *expanded* memory, use: SET VWREMS=OFF

For *extended* memory, use: SET VWRXMS-OFF

Command-Line Options

Use the following command syntax at the DOS prompt:

```
VIEW      [filespec] [/?] [/VIDEO]
```

NOTE *There are additional command-line options that you can use to control program display and mouse operation. See the* Global PC Tools Command-Line Options *chapter in* Part 4 *or type* `VIEW /VIDEO`.

Option	What It Does
filespec	Specifies the file or files to view. DOS wildcards * and ? can be used.
/?	Displays command-line help for View options.
/VIDEO	Displays command-line help for View program display and mouse options.

Troubleshooting Data Recovery and System Utilities

This chapter contains general disk- and file-related problems you may encounter while you are using your computer—many of which can be solved by using the Central Point Software data recovery utilities.

NOTE *Before you call for technical support, please check to see if the problem you are experiencing is discussed in this chapter. And remember—regular backups are the best way to ensure that you will be able to recover your data.*

Here's what you'll find in this chapter:

- **General Problems** discusses problem situations you may encounter.
- **DOS Error Messages** describes error messages generated by DOS.
- **CHKDSK Error Messages** describes error messages generated by the DOS CHKDSK command, which reports disk status.
- **If All Else Fails** discusses low-level formatting of your hard disk.

Use DiskFix rather than CHKDSK to analyze and repair disk-related problems, because DiskFix will save your data in situations where CHKDSK would destroy it. If you run CHKDSK and get an error message, refer to the CHKDSK section of this chapter for instructions.

Problems and error messages are alphabetized within each section.

For information about how to use the PC Tools utilities mentioned in the troubleshooting solutions, refer to the chapters that describe the individual programs.

You can also see this information by choosing the Advice option from the DiskFix Main Menu or from the Help menu in PC Tools Desktop.

General Problems

Accidental deletion of a file

Cause: You deleted a file accidentally.

Solution: Use Undelete. Start it from the DOS prompt rather than from within PC Tools Desktop.

Accidental format of disk—the DOS DIR command cannot find any files

Cause: You formatted your hard disk when you meant to format a floppy disk; or you formatted the wrong floppy disk; or you mistakenly used the ERASE *.* or RECOVER *drive*: commands.

Solution: Use Unformat for a hard disk drive or for a floppy disk that was formatted with PC Format. If the floppy disk was formatted with the DOS FORMAT command, the data is gone and cannot be recovered.

Bad partition table

Cause: There is an error in the partition table in the system area of the disk.

Solution:

1. Restart from the emergency disk and use DiskFix to rebuild the partition table.
2. If the damage is too severe for DiskFix to repair, you may have to run FDISK to repartition the drive, then PC Format to reformat it.

WARNING Depending on the version of FDISK you use, repartitioning the drive will most likely cause you to lose all the data. This is why backups are essential.

Bad root directory

Cause: The root directory of the disk was damaged in some way.

Solution:

1. Restart your computer. If necessary, restart from the emergency disk or another bootable floppy disk.
2. Use the Repair a Disk option of DiskFix.

Cannot create a file

Cause: The disk or root directory is full; or you are trying to rename or change a read-only file; or the disk is physically damaged.

Solution:

- If the disk or root directory is full, use another disk or use FileFind to delete files or move files to other directories. Generally, the root directory on a hard disk is limited to 512 files.

or

If it is a read-only file, use FileFind to check and change the file's attributes.

or

1. Use the Repair a Disk option of DiskFix to correct directory corruption.
2. If the problem remains:
   - Use the Revitalize a Disk option of DiskFix to low-level format the disk. For a hard disk drive, use at least minimum pattern testing.
   - If your type of hard disk will not allow low-level formatting, DiskFix will let you know. Use the Surface Scan option of DiskFix instead, with at least minimum pattern testing.
   - Restart the computer.
   - Use the Repair a Disk option of DiskFix again to fix any system damage.

Cannot find file(s)

Cause: You typed a file name or path incorrectly; or the file is not in your current directory; or it has been deleted; or it was in a directory that has been deleted or corrupted.

Solution:

1. Check your spelling.
2. If necessary, change to the directory where the file you want to use is located.
3. If the file is not where you expected, use FileFind to find it.
4. If you still cannot find the file, use the Repair a Disk option of DiskFix to correct any directory corruption.
5. If this fails, the file may be deleted or in a deleted directory.
   - Use Undelete to find and recover it.

     or

     Recopy program files from the original disk and copy data files from the most recent backup.

Cannot use a DOS command

Cause: You are trying to use a command that is not in your current directory, or was deleted, or is not supported by your version of DOS.

Solution:

1. Change to the directory where the command is located or use the right path to the directory. Use FileFind to locate it if necessary.
2. Use the DOS VER command to check what version you booted with and make sure the DOS utility is from the same version. Use FileFind to verify the file dates, which are a good indication of version compatibility.
3. If you cannot find the utility or verify its compatibility, copy it from your original DOS disks to the desired directory.

Computer "hangs" when PC-Cache is being loaded from AUTOEXEC.BAT or when you access a cached drive.

Cause: PC-Cache may be having a problem loading into the type of memory it has selected by default. Or you may have a unique computer configuration that is not compatible with PC-Cache.

Solution: See "PC-Cache Problems" in the *Data Recovery and System Utilities Error Messages chapter.*

Cross-linked files

Cause: Two files have been allocated the same space in the File Allocation Table (FAT).

Solution: Use the Repair a Disk option of DiskFix.

Error reading (or writing) drive x

Cause: This is usually caused by a bad sector.

Solution:

1. Use the Repair a Disk option of DiskFix.
2. Use the Revitalize a Disk option of DiskFix to low-level format the disk. For a hard disk drive, use at least minimum pattern testing.

3. If your type of hard disk will not allow low-level formatting, DiskFix will let you know. Use the Surface Scan option of DiskFix instead, with at least minimum pattern testing.
4. Restart the computer.
5. Use the Repair a Disk option of DiskFix again to repair any system damage.

File Allocation Table is bad

Cause: The File Allocation Table (FAT) has been damaged, possibly due to a bad sector. Symptoms of a bad File Allocation Table include inaccessible files or data, cross-linked files, lost clusters, and File Allocation Table error messages.

Solution:

1. Use the Repair a Disk option of DiskFix.
2. Restart the computer.
3. If this does not solve the problem:
   - Use the Revitalize a Disk option of DiskFix to low-level format the disk. For a hard disk drive, use at least minimum pattern testing.
   - If your type of hard disk will not allow low-level formatting, DiskFix will let you know. Use the Surface Scan option of DiskFix instead, with at least minimum pattern testing.
   - Use the Repair a Disk option of DiskFix again to fix any system damage.
4. If the problem persists, see "If All Else Fails" at the end of this chapter.

Files or programs cannot be accessed

Cause: There are errors reading or writing to the disk. The disk has bad sectors, possibly due to weak address marks; or the File Allocation Table or directories may be damaged.

Solution:

1. Use the Repair a Disk option of DiskFix.
2. Use the Revitalize a Disk option of DiskFix to low-level format the disk. For a hard disk drive, use at least minimum pattern testing.

3. If your type of hard disk will not allow low-level formatting, DiskFix will let you know. Use the Surface Scan option of DiskFix instead, with at least minimum pattern testing.
4. If it's a hard disk, restart the computer.
5. If this does not solve the problem, use the Repair a Disk option of DiskFix again to fix any system damage.

Floppy disk cannot be accessed

Cause: Data is damaged so that DOS cannot recognize it. This may be due to sector read errors, vital sectors not being found, possible CMOS errors, or a non-DOS disk.

Solution:

1. Use the Repair a Disk option of DiskFix.

   or

   If it is a CMOS error, make sure you have your emergency disk available. It contains a copy of the information stored in the CMOS.

   From DOS, type

   ```
   DISKFIX /CMOS
   ```

2. If this does not solve the problem:
   - If you are sure you are using a DOS disk, use the Revitalize a Disk option of DiskFix.
   - Then use the Repair a Disk option of DiskFix again to fix any system damage.

Hard disk getting slower—files and programs take longer to load

Cause: Data is fragmented (stored in more than one place) on the disk.

Solution: Use Compress to unfragment your files. Run Mirror when you are prompted to from within Compress.

Hard disk will not boot

Cause: The DOS system files are corrupt, or the partition table or boot sector is bad, or there is a hardware failure.

Solution:

- Restart the computer from the emergency disk and use it to run DiskFix and rebuild the partition table and boot sector.

  or

1. If you don't have a emergency disk, boot from a floppy disk that contains the DOS system files.
2. Disable your AUTOEXEC.BAT file by temporarily giving it another name and try restarting from the hard disk.
3. Run DiskFix from the original floppy disk or a working copy and select the Repair a Disk option.

Memory-resident programs won't start or run properly

Cause: The program you are trying to use is in conflict with another memory-resident program.

Solution:

1. If you have PC-Cache installed, see "PC-Cache Problems" in the *Data Recovery and System Utilities Error Messages chapter.*
2. You may need to change the order in which memory-resident programs are installed, or make other adjustments. For instructions, see the *Memory-Resident Programs* chapter.

No room for system files

Cause: You tried to use the DOS SYS command, but there was not enough space reserved on the disk for the DOS system files.

Solution:

1. Copy to temporary storage any files on the disk that you wish to keep (for a hard disk, use Central Point Backup to back up these files).
2. Reformat the disk using the Install System Files option of PC Format.
3. Then copy back the files you want on the disk.

Non-DOS disk

Cause: You tried to use a non-DOS disk or a disk with a bad media descriptor.

Solution: If you are sure you are using a DOS disk, use the Repair a Disk option of DiskFix.

Not enough room on disk

Cause: Disk is full.

Solution:

- Move files to another disk or delete files from the original disk.

  or

  If you think the disk is not full, use the Repair a Disk option of DiskFix. There may be lost clusters that can be converted to files and then moved or deleted to free up space.

Root directory is scrambled

Cause: The root directory of the disk was damaged in some way.

Solution: Use the Repair a Disk option of DiskFix.

Subdirectories cannot be accessed

Cause: There is damage to the part of the File Allocation Table that points to where a directory is located; or there is garbled information in the parent directory.

Solution: Use the Repair a Disk option of DiskFix. If subdirectories cannot be accessed, there may also be missing files. If there are, refer to the solution for the DOS error message "File not found."

DOS Error Messages

Access denied

Cause: You tried to delete, write to, or replace a read-only file; or you tried to open a directory as a file; or you tried to exceed the file limit of the root directory.

Solution:

- If it is a read-only file, use FileFind to check and change the file's attributes.

  or

  Make sure you are not trying to open a directory as a file.

  or

  If there are too many files in the root directory, use FileFind to delete files or move files to other directories. Generally, the root directory on a hard disk is limited to 512 files.

Bad command or file name

Cause: You typed a file name or path incorrectly; or the file is not in your current directory; or it has been deleted; or it was in a directory that has been deleted.

Solution:

1. Check your spelling.
2. If necessary, change to the directory where the file you want to use is located.
3. If the file is not where you expected, use FileFind to find it.
4. If you still cannot find the file, use the Repair a Disk option of DiskFix to correct any directory corruption.
5. If this fails, the file may be deleted or in a deleted directory.
   - Use Undelete to find and recover it.

     or

     Recopy program files from the original disk and copy data files from the most recent backup.

Bad or missing Command Interpreter

Cause: Your COMMAND.COM file has become corrupt; or you tried to boot the computer from a disk that does not contain COMMAND.COM.

Solution:

1. Make sure you have COMMAND.COM on the disk you are trying to boot with; if necessary, copy COMMAND.COM to the disk.
2. If necessary, edit the SHELL command in the CONFIG.SYS file to point to the correct location of COMMAND.COM.

Cannot find System Files

Cause: The system files are corrupt or missing.

Solution:

1. Replace the files needed to boot your disk.
   - Insert the emergency disk (or another floppy disk that contains the DOS SYS.COM file). Make sure the floppy has the same version of DOS as the drive you were trying to use.

     Use the SYS command on the problem drive; for example, type `SYS C:`. (See your DOS manual for more about the SYS command.)
   - Then copy COMMAND.COM from the floppy disk to the root directory of the boot partition, or to where the SHELL command in the CONFIG.SYS file is pointing.
2. If you still have problems, there may be other damage that prevents the SYS command from working.
   - Use the Repair a Disk option of DiskFix.
   - Then repeat step 1 if necessary.

Cannot load COMMAND, system halted

Cause: The COMMAND.COM file was not on the specified path; or an error in RAM was caused by a problem in the software you were using.

Solution:

1. Restart the computer.
2. If you get the same message:

- Insert the emergency disk (or another floppy disk that contains the DOS SYS.COM file). Make sure the floppy has the same version of DOS as the drive you were trying to use.
- Use FileFind to locate all copies of the COMMAND.COM file. If you find more than one, delete the extras, leaving the one you want in the root directory of the disk. Make sure the COMMAND.COM file is from the correct version of DOS.
- If necessary, copy COMMAND.COM from the floppy disk to the root directory of the boot partition, or to where the SHELL command in the CONFIG.SYS file is pointing.

3. If this does not solve the problem, try adding a SHELL= command line in your CONFIG.SYS file and a SET COMSPEC= statement in your AUTOEXEC.BAT file (see your DOS manual).

Data error reading (or writing) drive x

Cause: This is usually caused by a bad sector.

Solution:

1. Use the Repair a Disk option of DiskFix.
2. Use the Revitalize a Disk option of DiskFix to low-level format a disk. For a hard disk drive, use at least minimum pattern testing.
3. If your type of hard disk will not allow low-level formatting, DiskFix will let you know. Use the Surface Scan option of DiskFix instead, with at least minimum pattern testing.
4. Restart the computer.
5. Use the Repair a Disk option of DiskFix again to fix any system damage.

Disk boot failure

Cause: You are trying to boot your computer from a disk that has missing or damaged system files.

Solution:

1. Restart your computer using the emergency disk. Make sure the floppy has the same version of DOS as the drive you were trying to use.
2. Run DiskFix.
3. If DiskFix doesn't fix the problem, replace the files needed to boot your disk.

- Insert your original system floppy disk that contains the DOS SYS.COM file.
- Use the SYS command on the problem drive; for example, type `SYS C:`. (See your DOS manual for more about the SYS command.)
- Then copy COMMAND.COM from the floppy disk to the root directory of the boot partition, or to where the SHELL command in the CONFIG.SYS file is pointing.

Divide overflow

Cause: Your computer interrupted program execution because it detected an attempt to divide by zero or another internal exception. This is usually caused by a problem in the program you were running at the time.

Solution: Restart your computer. If you receive the same error again when you use a particular program, contact the program manufacturer.

Drive not ready
Abort, Retry, Ignore, Fail?

Cause: DOS does not know that the disk is in the drive. The disk may be bad or contain corrupt or missing system files; it may be a non-DOS disk.

Solution:

For a floppy disk:

1. Make sure the disk is inserted correctly and the latch is closed.
2. If it is correctly inserted, and you're sure it's a DOS disk, use the Repair a Disk option of DiskFix.

For a hard disk:

1. Restart the computer from the emergency disk and use it to run DiskFix to rebuild the partition table and boot sector.
2. If this does not solve the problem:
   - Use the Revitalize a Disk option of DiskFix to low-level format the disk. For a hard disk drive, use at least minimum pattern testing.
   - If your type of hard disk will not allow low-level formatting, DiskFix will let you know. Use the Surface Scan option of DiskFix instead, with at least minimum pattern testing.

- Use the Repair a Disk option of DiskFix again to fix any system damage.

3. If the problem continues, replace the files needed to boot your disk.
   - Insert the emergency disk (or another floppy disk that contains the DOS SYS.COM file). Make sure the floppy has the same version of DOS as the drive you were trying to use.
   - Use the SYS command on the problem drive; for example, type `SYS C:`. (See your DOS manual for more about the SYS command.)
   - Then copy COMMAND.COM from the floppy disk to the root directory of the boot partition, or to where the SHELL command in the CONFIG.SYS file is pointing.
4. If the problem persists, see "If All Else Fails" at the end of this chapter.

Error in EXE file

Cause: A program file is damaged.

Solution: Try starting the program again with another copy of the .EXE file from the original program disk.

Error loading operating system

Cause: An error occurred while DOS was being loaded.

Solution:

1. Restart the computer.
2. If the error remains, use the Repair a Disk option of DiskFix.
3. If that does not work, replace the files needed to boot your disk.
   - Insert the emergency disk (or another floppy disk that contains the DOS SYS.COM file). Make sure the floppy has the same version of DOS as the drive you were trying to use.
   - Use the SYS command on the problem drive; for example, type `SYS C:`. (See your DOS manual for more about the SYS command.)
   - Then copy COMMAND.COM from the floppy disk to the root directory of the boot partition, or to where the SHELL command in the CONFIG.SYS file is pointing.

Error reading (or writing) fixed disk

Cause: The disk may be bad; or it may contain corrupt or missing system files.

Solution:

1. Use the Repair a Disk option of DiskFix.
2. If this does not solve the problem:
   - Use the Revitalize a Disk option of DiskFix to low-level format the disk. For a hard disk drive, use at least minimum pattern testing.
   - If your type of hard disk will not allow low-level formatting, DiskFix will let you know. Use the Surface Scan option of DiskFix instead, with at least minimum pattern testing.
   - Restart the computer.
   - Use the Repair a Disk option of DiskFix again to fix any system damage.

Error writing directory

Cause: There may be damaged sectors on the disk.

Solution:

1. Use the Revitalize a Disk option of DiskFix to low-level format the disk. For a hard disk drive, use at least minimum pattern testing.
2. If your type of hard disk will not allow low-level formatting, DiskFix will let you know. Use the Surface Scan option of DiskFix instead, with at least minimum pattern testing.
3. Restart the computer.
4. Use the Repair a Disk option of DiskFix again to fix any system damage.

Error writing FAT

Cause: The File Allocation Table (FAT) has been damaged, possibly due to a bad sector.

Solution:

If there is a bad sector in the FAT, the disk is probably unusable. All recovery efforts may not work, but try the following solutions:

1. Use the Repair a Disk option of DiskFix.

2. Restart the computer.
3. If this does not solve the problem, use DiskFix to correct possible read/write errors:
   - Use the Revitalize a Disk option of DiskFix to low-level format the disk. For a hard disk drive, use at least minimum pattern testing.
   - If your type of hard disk will not allow low-level formatting, DiskFix will let you know. Use the Surface Scan option of DiskFix instead, with at least minimum pattern testing.
   - Use the Repair a Disk option of DiskFix again to fix any system damage.
4. If the problem persists, see "If All Else Fails" at the end of this chapter.

Error writing partition table

Cause: You are trying to create or modify a partition table, but that section of the disk is damaged.

Solution:

1. Since the process of creating or modifying a partition table has already destroyed any data that may have been on the disk, you can perform a destructive low-level format of the entire drive. (If you don't know how to do this, contact your hard disk dealer.)
2. Next, repartition the disk with FDISK.
3. Restart the computer.
4. Use PC Format to reformat the drive.
5. If you made a backup of any data that was on the disk before you tried to create or modify the partition table, restore the data from that backup.

File Allocation Table bad drive x

Cause: The File Allocation Table (FAT) has been damaged, possibly due to a bad sector.

Solution:

If there is a bad sector in the FAT, the disk is probably unusable. All recovery efforts may not work, but try the following solutions:

1. Use the Repair a Disk option of DiskFix.
2. Restart the computer.

3. If this does not solve the problem, use DiskFix to correct possible read/write errors:
   - Use the Revitalize a Disk option of DiskFix to low-level format the disk. For a hard disk drive, use at least minimum pattern testing.
   - If your type of hard disk will not allow low-level formatting, DiskFix will let you know. Use the Surface Scan option of DiskFix instead, with at least minimum pattern testing.
   - Use the Repair a Disk option of DiskFix again to fix any system damage.
4. If the problem persists, see "If All Else Fails" at the end of this chapter.

File creation error

Cause: The disk or root directory is full; or you are trying to rename or change a read-only file; or the disk is physically damaged.

Solution:

- If it is a read-only file, use FileFind to check and change the file's attributes.

  or

  If there are too many files in the root directory, use FileFind to delete files or move files to other directories. Generally, the root directory on a hard disk is limited to 512 files.

  or

1. Use the Repair a Disk option of DiskFix to correct directory corruption.
2. If the problem remains:
   - Use the Revitalize a Disk option of DiskFix to low-level format the disk. For a hard disk drive, use at least minimum pattern testing.
   - If your type of hard disk will not allow low-level formatting, DiskFix will let you know. Use the Surface Scan option of DiskFix instead, with at least minimum pattern testing.
   - Restart the computer.
   - Use the Repair a Disk option again to fix any system damage.

File not found

Cause: You typed a file name or path incorrectly; or the file is not in your current directory; or it has been deleted; or it was in a directory that has been deleted or corrupted.

Solution:

1. Check your spelling.
2. If necessary, change to the directory where the file you want to use is located.
3. If the file is not where you expected, use FileFind to find it.
4. If you still cannot find the file, use the Repair a Disk option of DiskFix to correct any directory corruption.
5. If this fails, the file may be deleted or in a deleted directory.
   - Use Undelete to find and recover it.

     or

     Recopy program files from the original disk and copy data files from the most recent backup.

General failure reading (or writing) drive x

Cause: DOS detects an error but cannot pinpoint it. The most likely cause is an unformatted floppy disk in the drive. This message may also be due to the wrong disk in the drive, no disk in the drive at all, or a damaged boot record.

Solution:

1. If the cause is an unformatted floppy disk in the drive, use PC Format to format the floppy disk.
2. Otherwise, use the Repair a Disk option of DiskFix to repair system damage.
3. If the problem remains:
   - Use the Revitalize a Disk option of DiskFix to low-level format the disk. For a hard disk drive, use at least minimum pattern testing.
   - If your type of hard disk will not allow low-level formatting, DiskFix will let you know. Use the Surface Scan option of DiskFix instead, with at least minimum pattern testing.

- Restart the computer.
- Use the Repair a Disk option again to fix any system damage.

Incorrect DOS Version

Cause: You are trying to run a utility that does not match the version of DOS you used to boot the computer.

Solution:

1. Use the DOS VER command to check what version of DOS you booted the computer with.
2. Make sure you boot the computer with a version of DOS that matches the DOS utilities installed. Use FileFind to verify the file dates for all system files on the drive; file dates are a good indication of version compatibility.
3. If in doubt, copy the DOS utilities from your original DOS disks.

Insufficient disk space

Cause: Disk is full.

Solution:

- Move files to another disk or delete files from the original disk.

  or

  If you think the disk is not full, use the Repair a Disk option of DiskFix. There may be lost clusters that can be converted to files and then moved or deleted to free up space.

Invalid current directory

Cause: An error occurred while reading the directory.

Solution: Use the Repair a Disk option of DiskFix.

Invalid drive specification

Cause: You specified a drive that does not exist or is not connected; or the partition table information is lost or corrupt; or your drive requires a special partition driver which is not loaded.

Solution:

1. Restart the computer from the emergency disk.

2. Run DiskFix with the /REBUILD option to rebuild the partition table and boot sector.
3. If the problem continues:
   - Use the Revitalize a Disk option of DiskFix to low-level format the disk. For a hard disk drive, use at least minimum pattern testing.
   - If your type of hard disk will not allow low-level formatting, DiskFix will let you know. Use the Surface Scan option of DiskFix instead, with at least minimum pattern testing.
   - Restart the computer.
   - Use the Repair a Disk option of DiskFix again to fix any system damage.
4. If the problem persists, see "If All Else Fails" at the end of this chapter.

Invalid partition table

Cause: There is an error in the partition table in the system area of the disk.

Solution:

- Restart the computer from the emergency disk and use it run DiskFix to rebuild the partition table.

  If the damage is too severe for DiskFix to repair, you may have to run FDISK to repartition the drive, then PC Format to reformat it.

WARNING Depending on the version of FDISK you use, repartitioning the drive will most likely cause you to lose all the data. This is why backups are essential.

Invalid path, not directory, or dir not empty

Cause: You tried to remove a directory that contains files or subdirectories, or that does not exist, or that is corrupt.

Solution:

1. Use Directory Maintenance to examine the directory and remove any subdirectories or files.
2. If this does not solve the problem, use the Repair a Disk option of DiskFix to examine the drive for corrupt directory information.

Memory allocation error

Cause: Memory has been corrupted by some program.

Solution: Restart the computer.

Missing operating system

Cause: You tried to boot your computer with a disk that has missing system files.

Solution:

1. Use the Repair a Disk option of DiskFix to repair the system files.
2. If this does not solve the problem:
   - Copy to temporary storage any files on the disk that you wish to keep (for a hard disk, use Central Point Backup to back up these files).
   - Reformat the disk using the Install System Files option of PC Format.
   - Then copy back the files you want on the disk.

Non-DOS disk error reading (or writing) drive x

Cause: The disk you are using is not a DOS disk; or it is corrupt.

Solution:

- If there is a disk in the floppy drive, remove it and restart the computer from the hard drive.

  or

  Use the Repair a Disk option of DiskFix.

Non-system disk or disk error

Cause: You are using a disk that does not contain the DOS system files, or that is damaged.

Solution:

- Use another disk that is bootable.

  or

  If you think the disk should be bootable, use the Repair a Disk option of DiskFix.

Not ready reading drive x
Abort, Retry, Fail?

Cause: The floppy disk drive door is open; or there is no disk in the drive.

Solution:

For a floppy disk:

1. Make sure it the disk is inserted correctly and the latch closed.
2. If it is correctly inserted, use the Repair a Disk option of DiskFix.

For a hard disk:

1. Restart the computer.
2. If this does not solve the problem:
   - Use the Revitalize a Disk option of DiskFix to low-level format the disk. For a hard disk drive, use at least minimum pattern testing.
   - If your type of hard disk will not allow low-level formatting, DiskFix will let you know. Use the Surface Scan option of DiskFix instead, with at least minimum pattern testing.
3. If the problem continues, use the Repair a Disk option of DiskFix again to fix any system damage.
4. If the problem persists, see "If All Else Fails" at the end of this chapter.

Path not found

Cause: Invalid path name specified.

Solution:

1. Check your spelling. Also, check the current PATH command.
2. If the path contains a directory you think exists:
   - Use the Repair a Disk option of DiskFix to recover lost chains as files (including, hopefully, the lost directory).
   - Use Directory Maintenance to examine any recovered directories (LOST*nnnn*.SUB subdirectories in the root directory) and, if you find the directory you were looking for, rename it to its original name.
   - If this doesn't work, use Undelete to scan the disk for lost deleted files.

Read fault error reading (or writing) drive x

Cause: You are using a disk that may be corrupted or damaged.

Solution:

1. Use the Repair a Disk option of DiskFix.
2. If the problem remains:
   - Use the Revitalize a Disk option of DiskFix to low-level format the disk. For a hard disk drive, use at least minimum pattern testing.
   - If your type of hard disk will not allow low-level formatting, DiskFix will let you know. Use the Surface Scan option of DiskFix instead, with at least minimum pattern testing.
   - Restart the computer.
   - Use the Repair a Disk option of DiskFix again to fix any system damage.
3. If the problem persists, see "If All Else Fails" at the end of this chapter.

Sector not found error reading (or writing) drive x

Cause: There is probably a defective spot on the disk so DOS cannot read the data.

Solution:

1. Use the Repair a Disk option of DiskFix.
2. If the problem remains:
   - Use the Revitalize a Disk option of DiskFix to low-level format the disk. For a hard disk drive, use at least minimum pattern testing.
   - If your type of hard disk will not allow low-level formatting, DiskFix will let you know. Use the Surface Scan option of DiskFix instead, with at least minimum pattern testing.
   - Restart the computer.
   - Use the Repair a Disk option of DiskFix again to fix any system damage.
3. If the problem persists, see "If All Else Fails" at the end of this chapter.

Seek error reading (or writing) drive x

Cause: There is probably a defective spot on the disk so DOS cannot read the data.

Solution:

1. Use the Repair a Disk option of DiskFix.
2. If the problem remains:
   - Use the Revitalize a Disk option of DiskFix to low-level format the disk. For a hard disk drive, use at least minimum pattern testing.
   - If your type of hard disk will not allow low-level formatting, DiskFix will let you know. Use the Surface Scan option of DiskFix instead, with at least minimum pattern testing.
   - Restart the computer.
   - Use the Repair a Disk option of DiskFix again to fix any system damage.
3. If the problem persists, see "If All Else Fails" at the end of this chapter.

Top level process aborted, cannot continue

Cause: You chose the Abort response to a DOS report of an error; however, the error was unrecoverable.

Solution: Restart your computer and use the Repair a Disk option of DiskFix to analyze and repair any bad sectors on the disk that caused the problem.

Unable to create directory

Cause: A directory or file with that name already exists; or the disk is full; or the root directory is full.

Solution:

1. Try a different name.
2. Delete unnecessary files if the disk is full.
3. Move files to a subdirectory if the root directory is full. Generally, the root directory on a hard disk is limited to 512 files.

Write protect error

Cause: The disk is write-protected, or Write Protection is turned on.

Solution:

- Remove write protection from a floppy disk and try again.

  or

  Use Data Monitor to turn Write Protection off.

CHKDSK Error Messages

The messages in this section appear when you use either CHKDSK or CHKDSK/F.

If you are using CHKDSK without the /F option, no repairs will be performed even though the prompt may ask if you want to fix the disk. Use the Repair a Disk option of DiskFix instead to repair the problem.

WARNING If you are using CHKDSK/F, press Ctrl C to cancel when any problem is found. This will let you use DiskFix to repair the problem instead.

If you continue using CHKDSK/F, you will most likely lose data that DiskFix can preserve. Moreover, if you try to use DiskFix after CHKDSK/F, DiskFix will no longer be able to repair the disk because information it needed to do so will have been destroyed.

(.) (..) does not exist

Cause: The directory structure is corrupted or damaged.

Solution: Use the Repair a Disk option of DiskFix.

/x Invalid option

Cause: You specified a CHKDSK command-line option that is invalid.

Solution: Use a valid option. Valid options are /V and /F; /V displays the full path for all files on the default or specified drive.

WARNING Do not use the /F option; instead, use the Repair a Disk option of DiskFix.

Allocation error, size adjusted

Cause: The number of clusters allocated to a file is not consistent with the size of the file as indicated in the directory.

Solution: Use the Repair a Disk option of DiskFix. This will usually recover the entire file, whereas CHKDSK/F will truncate it.

Cannot CHDIR to root

Cause: While checking the directories on a disk, DOS is unable to get back to the root directory.

Solution: Use the Repair a Disk option of DiskFix.

Cannot CHDIR to subdirectory

Cause: CHKDSK attempted to change directories and failed.

Solution: Use the Repair a Disk option of DiskFix.

Cannot RECOVER (.) entry, processing continued

Cause: A directory is corrupt.

Solution: Use the Repair a Disk option of DiskFix.

Cannot RECOVER (..) entry, processing continued

Cause: A directory is corrupt.

Solution: Use the Repair a Disk option of DiskFix.

Cannot RECOVER entry, processing continued

Cause: A file or directory contains a bad sector.

Solution:

1. Use the Repair a Disk option of DiskFix.
2. If the problem remains:
   - Use the Revitalize a Disk option of DiskFix to low-level format the disk. For a hard disk drive, use at least minimum pattern testing.

- If your type of hard disk will not allow low-level formatting, DiskFix will let you know. Use the Surface Scan option of DiskFix instead, with at least minimum pattern testing.
- Restart the computer.
- Use the Repair a Disk option of DiskFix again to fix any system damage.

CHDIR (..) failed trying alternate method

Cause: DOS was unable to change to the parent directory.

Solution: Use the Repair a Disk option of DiskFix.

Contains xxx non-contiguous blocks

Cause: The disk contains fragmented files.

Solution: Use Compress to unfragment your files.

Convert directory to file Y/N?

Cause: CHKDSK found a directory so damaged that it is no longer valid.

Solution: Answer N (No); then use the Repair a Disk option of DiskFix.

Directory is totally empty, no (.) or (..)

Cause: The DOS subdirectory and parent directory pointers are missing or invalid.

Solution: Use the Repair a Disk option of DiskFix.

Disk error reading (or writing) FAT

Cause: The File Allocation Table (FAT) has been damaged, possibly due to a bad sector.

Solution:

1. Use the Repair a Disk option of DiskFix.
2. Restart the computer.
3. If this does not solve the problem:
   - Use the Revitalize a Disk option of DiskFix to low-level format the disk. For a hard disk drive, use at least minimum pattern testing.

- If your type of hard disk will not allow low-level formatting, DiskFix will let you know. Use the Surface Scan option of DiskFix instead, with at least minimum pattern testing.
- Use the Repair a Disk option of DiskFix again to fix any system damage.

4. If the problem persists, see "If All Else Fails" at the end of this chapter.

Entry has a bad attribute (or size or link)

Cause: A directory is corrupt.

Solution:

1. Use the Repair a Disk option of DiskFix.
2. If the problem remains, use Directory Maintenance to change the directory attribute.

Errors found, F option not specified.

Cause: CHKDSK found errors on the disk. If the /F option was not specified, CHKDSK continues displaying an error message, but does not correct the errors.

Solution:

1. Answer N (No) to continue.
2. Do not run CHKDSK using the /F option. Instead, use the Repair a Disk option of DiskFix.

File is cross linked to cluster x

Cause: Two files are trying to claim the same space on the disk.

Solution: Use the Repair a Disk option of DiskFix.

First cluster number is invalid, entry truncated

Cause: The file directory entry contains an invalid pointer to its data.

Solution: Use the Repair a Disk option of DiskFix.

Has invalid cluster, file truncated

Cause: The File Allocation Table contains an invalid pointer to its data.

Solution: Use the Repair a Disk option of DiskFix.

Insufficient room in root directory

Cause: When you use CHKDSK to recover lost chains of data into files, it places the recovered files in your root directory. If you get this message, the root directory is full.

Solution:

1. Copy the recovered files onto another disk or directory.
2. Then delete them from the root directory.
3. Use the Repair a Disk option of DiskFix to recover the remaining lost chains into files.
4. Repeat as necessary.

Invalid current directory

Cause: There is a bad directory on the disk.

Solution: Use the Repair a Disk option of DiskFix.

Invalid subdirectory entry

Cause: There is invalid data in a subdirectory.

Solution: Use the Repair a Disk option of DiskFix.

xxx Lost clusters found in yyy chains. Convert lost chains to files Y/N?

Cause: DOS at one time allocated space on the disk for data. However, no file is currently claiming this space.

Solution: Answer N (No); then use the Repair a Disk option of DiskFix.

Non-DOS diskette

Cause: You tried to use a non-DOS disk or a disk with a bad media descriptor.

Solution: If you are sure you are using a DOS disk, use the Repair a Disk option of DiskFix.

Probable non-DOS disk, continue (Y/N)

Cause: You tried to use a non-DOS disk or a disk with a bad media descriptor.

Solution: If you are sure you are using a DOS disk, use the Repair a Disk option of DiskFix.

Processing cannot continue

Cause: The directory tree is bad and CHKDSK cannot continue.

Solution: Use the Repair a Disk option of DiskFix.

Unrecoverable error in directory

Cause: CHKDSK found an error in the directory it cannot correct.

Solution: Use the Repair a Disk option of DiskFix.

If All Else Fails

Your disk cannot be repaired non-destructively.

Cause: Damage to your disk media is so severe that the Revitalize a Disk option of DiskFix cannot repair it non-destructively; or you have a type of hard disk that does not allow the Revitalize a Disk option of DiskFix to perform a non-destructive low-level format.

Solution: This solution involves low-level formatting, which prepares the surface of the disk to store data by writing address markers that identify sectors (the smallest unit of storage that can be read or written at one time).

Most low-level format procedures destroy all data on the entire disk. This differs from the Revitalize a Disk option of DiskFix, which can perform a non-destructive low-level format on all floppy disks and on some types of hard disks. Revitalize a Disk saves a copy of your data before it performs the low-level format of a selected drive, one track at a time, and then restores that data after formatting is finished.

1. If you haven't already done so, carry out the instructions elsewhere in this chapter for your particular problem. Make sure you followed the instructions in the order specified and that you repeated the procedure if directed to do so.
2. If those steps have not solved your problem, use Central Point Backup to make a backup of all the partitions on your entire disk. If, for some reason, you cannot back up the entire disk, at least back up the most critical data.

   If your problem is due to a bad sector, you will not be able to run Central Point Backup. You will have to rely on your most recent backup.

WARNING This rest of this procedure will destroy the data on every partition of your disk. You will need to restore data from your most recent backup. If you don't know how to do a low-level format, contact your hard disk dealer.

Never low-level format a drive with Stacker or SuperStor drivers installed. These drives are, in fact, files containing drive information, and a low-level format can destroy the drive information.

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3. Low-level format the entire disk.
4. Next, partition the disk with FDISK or whatever partitioning software you use.
5. Format all partitions on the disk using PC Format or the DOS FORMAT program (a high-level format).
6. Restore the data from the backup made in step 2 (or from your most recent backup if the backup made in step 2 was not successful).
7. If the problem persists, you should replace the disk.

Data Recovery and System Utilities Error Messages

This chapter contains error messages and problem situations that may occur while you are using some of the Central Point data recovery and system utilities. Utilities are listed in alphabetic order, and the errors and problem statements are organized alphanumerically within each utility's section. Following each error message, you will find its probable causes and solutions.

NOTE *Before you call for technical support, please check to see if the problem you are experiencing is discussed in this chapter. And remember—regular backups are the best way to ensure that you will be able to recover your data.*

Compress Error Messages

004, 012 (Invalid choice errors)

Cause: **004** Invalid options

012 Invalid drive

Solution: Depending on the error number, specify the options, drive, or option.

028 (Capacity error)

Cause: **028** Directory table buffer overflowed

The drive being compressed may have too many files or directories to process. Compress is currently able to handle over 10,000 total files and directories, depending upon the size of the files, the amount of fragmentation, and the number of directories on the disk. The number of files, directories, and hidden directories Compress can use also depends upon the amount of available memory.

Solution:

- Delete unnecessary files or move some to another drive.
- If you have a file archiving utility you may be able to compress many files not often used into one large file.

- If your CONFIG.SYS file does not include specifications for BUFFERS=*xx* and FILES=*xx*, add them. If these specifications are there, try increasing the sizes.
- Remove memory-resident programs and unnecessary device drivers from memory until Compress has enough memory to run. Use one of the following techniques:
  - Boot the computer from the emergency disk or another floppy disk containing DOS system files.
  - Many memory-resident programs include a command that will remove them from memory. (For example, typing `KILL` will remove most PC Tools memory-resident software.)
  - Remark out (REM) the memory-resident program commands in the AUTOEXEC.BAT and CONFIG.SYS files, and restart.
  - Try using a DOS memory manager that increases available low RAM.

036 to 052 (Memory errors)

Cause:

036 Invalid memory block segment

040 Memory block never allocated

044 Memory not available for allocation

052 Memory not available for buffers

You need more memory, or you may need to remove some of your memory-resident programs. These errors may also appear if there are more files on the drive than Compress currently handles (see "028" error, above).

Solution:

- Remove memory-resident programs and unnecessary device drivers from memory until Compress has enough memory to run. Use one of the following techniques:
- Boot the computer from the emergency disk or another floppy disk containing DOS system files.
- Many memory-resident programs include a command that will remove them from memory. (For example, typing `KILL` will remove most PC Tools memory-resident software.)
- Remark out (REM) the memory-resident program commands in the AUTOEXEC.BAT and CONFIG.SYS files, and restart.

112 (Sector error)

Cause: Bad cluster found in file chainThere is probably a defective spot on the disk so DOS cannot read the data.

Solution:

1. Use the Repair a Disk option of DiskFix.
2. If the problem remains:
   - Use the Revitalize a Disk option of DiskFix to low-level format the disk. For a hard disk drive, use at least minimum pattern testing.
   - If your type of hard disk will not allow low-level formatting, DiskFix will let you know. Use the Surface Scan option of DiskFix instead, with at least minimum pattern testing.
   - Restart the computer and use the Repair a Disk option of DiskFix again to fix any system damage.
3. If the problem persists, see "If All Else Fails" at the end of the *Troubleshooting Data Recovery and System Utilities* chapter.

520 – MIRROR.COM terminated with errors

Cause: DOS could not start Mirror because of insufficient memory or because it couldn't find MIRROR.COM.

Memory may be insufficient because there is another program resident in memory, such as PC Tools Desktop, or because you ran Compress from PC Tools Desktop with the Quick Run option on.

DOS may not be able to find MIRROR.COM if it's not in the same directory as Compress or if you have removed the floppy disk that was used to start Compress (assuming Mirror and Compress reside on the same floppy).

Solution:

- Start Mirror from the DOS prompt after exiting from Compress.
- If MIRROR.COM is not in the same directory or on the same floppy disk as Compress, you may want to move one or the other for future use.

600 – No root directory filenames.

Cause: The root directory of the disk was damaged in some way.

Solution:

1. Restart your computer. If your computer fails to boot properly, restart from the emergency disk or another floppy disk containing DOS system files.
2. Use the Repair a Disk option of DiskFix.
3. If this doesn't work, use Undelete to recover lost deleted files.

610 – Insufficient disk space available.

Cause: Disk is full. There must be a minimum of two free clusters on the disk being compressed.

Solution:

- Move files to another disk or delete files from the original disk.
- If you think the disk is not full, use the Repair a Disk option of DiskFix. There may be lost clusters that can be converted to files and then moved or deleted to free up space.

800 to 999 (DOS errors)

These errors are passed back from DOS:

Cause:

800 Write protected diskette
808 Drive failed to respond
812 Unknown command encountered
816 Data error (CRC)
824 Seek operation failed
828 Unknown media type
832 Requested sector not found
836 Printer does not respond
840 Write fault encountered
844 Read fault encountered
848 General request failure
860 Unidentified error code
999 Unidentified message number

Solutions:

- Error **800** indicates that the floppy disk you are trying to access is write-protected. Remove the write protection and try again.
- Errors **808** and **848** may indicate that a hard disk driver is necessary to access your hard drive. Check your CONFIG.SYS file to make sure that any necessary driver is being loaded. If the necessary driver is not being loaded, add it to your CONFIG.SYS and restart your system.
- Error **828** may indicate that you are using an older version of Compress (for example, version 4, which won't recognize partitions over 32MB for DOS 4.x.).
- Errors **816, 832, 840, 844**, and **848** may indicate that Compress encountered a damaged sector that is not marked as bad in the File Allocation Table. Follow the steps for "Data error (CRC)," below.
- For errors **836** and **840**, make sure your printer is turned on. If you are sending the report to a file on disk, make sure that you selected a valid drive for the report, that there is enough disk space, and that the root directory of the disk (where the report is sent) is not full.

Data error (CRC) – Error 816

Cause: This is usually caused by a bad sector.

Solution:

1. Use the Repair a Disk option of DiskFix.
2. Use the Revitalize a Disk option of DiskFix to low-level format the disk. For a hard disk drive, use at least minimum pattern testing.
3. If your type of hard disk will not allow low-level formatting, DiskFix will let you know. Use the Surface Scan option of DiskFix instead, with at least minimum pattern testing.
4. Restart the computer and use the Repair a Disk option of DiskFix again to fix any system damage.

Current disk organization prevents Compress from completing. Change to Full Compression technique.

Cause: Compress builds internal tables which it uses to move data around on the disk. You are using a compression technique—for example, the Unfragment Files technique—that prevents Compress from applying this table information to the disk properly.

Solution: Change the compression technique to Full Compression and begin the compression again.

Drive not ready – press any key to retry, or Esc to cancel.

Cause: DOS does not know that the floppy disk is in the drive. The floppy disk may be bad; or the system area may be corrupt or missing; or the disk could be a non-DOS disk.

Solution:

For a floppy disk:

1. Make sure it is inserted correctly and that the latch is closed.
2. If it is correctly inserted, and you're sure it's a DOS disk, use the Repair a Disk option of DiskFix.

For a hard disk:

1. Restart the computer from the emergency disk and use it run DiskFix to rebuild the partition table and boot sector.
2. If this does not solve the problem:
   - Use the Revitalize a Disk option of DiskFix to low-level format the disk. For a hard disk drive, use at least minimum pattern testing.
   - If your type of hard disk will not allow low-level formatting, DiskFix will let you know. Use the Surface Scan option of DiskFix instead, with at least minimum pattern testing.
   - Use the Repair a Disk option of DiskFix again to fix any system damage.
3. If the problem continues, replace the files needed to boot your disk.
   - Insert the emergency disk (or another floppy disk that contains the DOS SYS.COM file). Make sure the floppy has the same version of DOS as the drive you were trying to use.

- Use the SYS command on the problem drive; for example, type `SYS C:`. (See your DOS manual for more about the SYS command.)
- Then copy COMMAND.COM from the floppy disk to the root directory of the boot partition, or to where the SHELL command in the CONFIG.SYS file is pointing.

4. If the problem persists, see "If All Else Fails" at the end of the *Troubleshooting Data Recovery and System Utilities* chapter.

Invalid drive specification

Cause: You specified a drive that does not exist or is not connected; or the partition table information is lost or corrupt; or your drive requires a special partition driver which is not loaded.

Solution:

1. Make sure you typed a valid drive letter and that the drive is connected.
2. Restart the computer from the emergency disk and use it to run DiskFix to rebuild the partition table and boot sector.
3. If the problem continues:
   - Use the Revitalize a Disk option of DiskFix to low-level format the disk. For a hard disk drive, use at least minimum pattern testing.
   - If your type of hard disk will not allow low-level formatting, DiskFix will let you know. Use the Surface Scan option of DiskFix instead, with at least minimum pattern testing.
   - Restart the computer and use the Repair a Disk option of DiskFix again to fix any system damage.
4. If the problem persists, see "If All Else Fails" at the end of the *Troubleshooting Data Recovery and System Utilities* chapter.

File chain overflowed File Allocation Table.

Cause: An entry in the File Allocation Table pointed to a cluster outside the bounds of the File Allocation Table.

Solution: Use the Repair a Disk option of DiskFix.

Fragmentation not encountered.

Cause: No files are fragmented, but you may want to reorder the disk.

Solution: Use Compress options to reorder the disk. For instance, you can speed up file searches if all the files in a frequently used directory are kept together and the directory is moved to the beginning of the disk.

Orchid Technology Turbo-286e mode has been detected. Your disk(ette) files may be damaged! Slower mode is recommended for Compress.

Cause: Orchid Technology has recommended that this particular board not be employed in its Turbo mode to run Compress. This is a limitation of the Turbo-286e board.

Solution: Put the Turbo-286e board into its slow mode before using Compress.

Option Specification Error.

Cause: The command-line options specified were invalid.

Solution: Use valid options listed in the *Compress* chapter.

Seek error.

Cause: DOS cannot find a track on the disk. The floppy disk is incorrectly inserted into the drive; or the drive latch is open; or there is a defective spot on the disk so DOS cannot read the data.

Solution:

For a floppy disk:

1. Check your drive door and reinsert the disk.
2. If this does not work, use the Revitalize a Disk option of DiskFix.

For a hard disk:

1. Use the Repair a Disk option of DiskFix.
2. If the problem remains:
   - Use the Revitalize a Disk option of DiskFix to low-level format the disk with at least minimum pattern testing.

- If your type of hard disk will not allow low-level formatting, DiskFix will let you know. Use the Surface Scan option of DiskFix instead, with at least minimum pattern testing.
- Restart the computer and use the Repair a Disk option of DiskFix again to fix any system damage.

3. If the problem persists, see "If All Else Fails" at the end of the *Troubleshooting Data Recovery and System Utilities* chapter.

System reboot recommendation CAUTION!!! Disk directories have been rewritten during the Compress function and may now conflict with directory pointers maintained by certain memory resident programs. If disk-oriented memory resident programs like FastOpen are active, or if a disk caching subsystem is in use, we recommend that you reboot the system before continuing. Press any key to terminate Compress.

Cause: This message appears when you exit from Compress. This warning is for those systems with memory-resident or other software that keep track of locations on the hard disk and fail to refresh or flush that information when the internal DOS "disk reset" command is issued.

An example of this is DOS's FASTOPEN command, which keeps copies of recently used directory entries but does not flush its internal buffers when a "disk reset" is issued. FASTOPEN does not recognize that Compress has relocated files; and if the files tracked by FASTOPEN are used subsequently, DOS gets confused and may destroy data. Some other disk caching programs, such as SMARTDRV.SYS, also do this.

Central Point's memory-resident programs, including PC Tools Desktop, Desktop Accessories, Commute, PC-Cache, and Delete Protection, have no compatibility problems with Compress.

Solution:

- No action is necessary if you are using Central Point's memory-resident programs exclusively. Press any key to exit from Compress.
- If you are using a program that fits the above description, restart the computer.

  In the future, remove such programs from memory before using Compress. Use one of the following techniques:

- Boot the computer from the emergency disk or another floppy disk containing DOS system files.

- Many memory-resident programs include a command that will remove them from memory. (For example, typing `KILL` will remove most PC Tools memory-resident software.)
- Remark out (REM) the memory-resident program commands in the AUTOEXEC.BAT and CONFIG.SYS files, and restart.
- If you are unsure, restart just to be safe.

A Stacker volume is attached to this system. Stac Electronics discourages the use of any disk defragmentation program such as Compress on a Stacker volume. Do you wish to exit?

Cause: Compress has detected that a volume on your system is a Stacker volume (a volume that uses data compression to store files in a compressed format).

Solution: Do not use Compress to optimize or defragment this volume. Choose Exit. You may, however, analyze the Stacker volume to determine if it needs defragmenting. You may also use Compress on any non-Stacker volume attached to your system. If you want to analyze a volume or use Compress on a non-Stacker volume, choose Continue.

WARNING! Cross–linked files have been encountered! Recommend running DiskFix before continuing.

Cause: Two files are occupying at least one of the same clusters.

Solution: Use the Repair a Disk option of DiskFix.

WARNING! Disk maintenance should be performed! Recommend running DiskFix before continuing.

Cause: Compress has found a discrepancy between the directory containing your DOS files and the File Allocation Table (FAT).

Solution: Use the Repair a Disk option of DiskFix.

WARNING! Insufficient disk(ette) space available for Compress.

Cause: Disk is full. There must be a minimum of two free clusters on the disk being compressed.

Solution:

- Move files to another disk or delete files from the original disk.

- If you think the disk is not full, use the Repair a Disk option of DiskFix. There may be lost clusters that can be converted to files and then moved or deleted to free up space.

WARNING! Unattached clusters have been encountered!
Recommend running DiskFix before continuing.

Cause: Compress has found allocated clusters in the File Allocation Table (FAT) that have no directory entries pointing to them.

Solution: Use the Repair a Disk option of DiskFix.

DiskFix Problems

Surface Scan hangs before the drive map screen appears.
Revitalize a Disk hangs during preliminary testing.
Revitalize a Disk hangs before the drive map screen appears.

Cause: Your computer system includes a controller card that is interfering with the preliminary testing and information gathering DiskFix performs to insure that your system can be safely analyzed and repaired.

Solution: You can allow DiskFix to safely continue if you have either of the following controller cards:

- If you have a Hardcache card from CompuAdd, restart DiskFix by typing: `DISKFIX /HCACHE`
- If you have a HardCard card from Plus Development Systems, restart DiskFix by typing: `DISKFIX /HCARD`

DiskFix Error Messages

Cannot allocate memory

Cause: DiskFix cannot find enough free memory to perform some function.

Solution:

- Remove memory-resident programs and unnecessary device drivers from memory until DiskFix has enough memory to run. Use one of the following techniques:
  - Boot the computer from the emergency disk or another floppy disk containing DOS system files.

- Many memory-resident programs include a command that will remove them from memory. (For example, typing `KILL` will remove most PC Tools memory-resident software.)
- Remark out (REM) the memory-resident program commands in the AUTOEXEC.BAT and CONFIG.SYS files, and restart.

NOTE *DiskFix should never be run at the same time that other programs are attempting to use RAM.*

Cannot process 8192 byte sectors
Cannot process 16384 byte clusters

Cause: DiskFix cannot process clusters larger than 16,384 bytes (or 32 sectors of 512 bytes each). DiskFix cannot process sectors larger than 8192 bytes. Some disk-partitioning software (such as SpeedStor) will allow you to modify the default sector and cluster size (the normal default sector size is 512 bytes) in order to bypass the 32MB barrier, which can potentially create a combination sector size and cluster size greater than DiskFix can process.

Solution: If possible, reformat the drive with smaller sector/cluster sizes, or upgrade to DOS 4.x or later, which lets you use more than 32 megabyte partitions.

Too many subdirectories to process

Cause: DiskFix can handle up to 1,000 subdirectories. If you receive this error, you are trying to process more than 1,000 subdirectories.

Solution: Move the information in some subdirectories to an existing directory or to another drive, and delete the empty subdirectories.

Too many files to process

Cause: DiskFix can process no more than 10,000 files.

Solution: Move some files to a different directory or drive, or back up excess files and delete them.

Delete Protection Problems

Two beep tones

Cause: Whenever Delete Protection cannot record a file deletion, the computer will beep twice.

Solution:

1. If the file to be deleted is one you will never want to recover, or if it is a temporary or backup file (such as the ones many word processors create), ignore the beeps.
2. Using FileFind, check to see if either the file to be deleted or—if you are using the Delete Tracker method—the PCTRACKR.DEL file has been given a read-only or hidden attribute. If so, change that attribute.
3. If you get two beeps the first time you try to delete a file, there may not enough room in the root directory to create the SENTRY directory or PCTRACKR.DEL file. Move some files to a subdirectory.
4. If you are on a network drive and get two beeps the first time you try to delete a file, you may not have the rights to create a \SENTRY directory. Contact your network administrator.
5. If you use the DOS ASSIGN command, check the AUTOEXEC.BAT file to make sure that ASSIGN is executed after Delete Protection.
6. Try using Undelete to restore a deleted file that was protected by Delete Tracker. If Undelete cannot find the deleted file, the PCTRACKR.DEL file may be corrupt. Try deleting PCTRACKR.DEL.

WARNING Once you delete the PCTRACKR file, you will no longer be able to use the information that file to restore other previously deleted files.

---

7. If none of these solves the problem, a read/write error may have occurred while Delete Protection was trying to track the file.
   - Use the Repair a Disk option of DiskFix.
   - Use the Revitalize a Disk option of DiskFix to low-level format the disk. For a hard disk drive, use at least minimum pattern testing.
   - If your type of hard disk will not allow low-level formatting, DiskFix will let you know. Use the Surface Scan option of DiskFix instead, with at least minimum pattern testing.
   - Restart the computer and use the Repair a Disk option of DiskFix again to fix any system damage.

PC-Cache Problems

Computer "hangs" when PC-Cache is loaded from the AUTOEXEC.BAT file, preventing the rest of AUTOEXEC.BAT from executing.

Computer "hangs" when you access a cached drive after PC-Cache is installed.

Cause: If you load PC-Cache with no size option, it loads into the first available memory type it finds, in this order: extended, then expanded, then conventional. PC-Cache may be having a problem loading into the type of memory it has selected by default. Or you may have a unique computer configuration that is not compatible with PC-Cache.

Solution:

1. Restart the computer using the emergency disk.
2. From DOS, type

   ```
   PC-CACHE /SIZE:64K
   ```

   This forces a small cache into conventional memory. If this works, the problem was with PC-Cache loading into extended or expanded memory and you may want to use a different memory type, as described below.

   For example, if your problem occurs in expanded memory, continue with step 3 and then use the SIZEXT= option in step 4 to force the cache to load in extended memory, if available.
3. From DOS, unload PC-Cache from memory by typing

   ```
   PC-CACHE /U
   ```
4. Restart the cache with a option that forces it to use an alternate memory type:

   `PC-CACHE /SIZEXT:64K` (extended memory)

   `PC-CACHE /SIZEXP:64K` (expanded memory)

   `PC-CACHE /SIZE:64K` (conventional memory)
5. If /SIZEXT fails, try `PC-CACHE/SIZEXTB:`*nnnn* to force the cache to use the BIOS method of memory access (least likely to cause compatibility problems).

6. If PC-Cache works in conventional memory but fails in extended or expanded memory, try different cache sizes, for example, less than 100K or greater than 100K.
7. If the problem continues, try using the /WRITE:OFF option to turn delayed writing to disk off for all drives, or use *d:n*, where *d:* is the drive specified and *n* mean no caching for this drive.
8. If PC-Cache fails to load into conventional memory or if none of these steps solve the problem, call our technical support staff. There may be a hardware compatibility problem or a problem with a driver. We may have more information about a compatibility problem as updates are made available.

PC-Cache won't load into DOS 5 upper memory blocks (UMBs) after Novell NET*x*

Cause: PC-Cache will not load into high memory because NETx interferes with the functioning of the DOS 5 LOADHIGH (or LH) command. This situation only occurs if you are using DOS 5's EMM386 or some other XMS UMB provider, the CONFIG.SYS file contains the DOS=UMB statement, and Novell's NETx.COM is loaded before PC-Cache.

Solution: Delete the LH or LOADHIGH command prefix and try loading PC-Cache again. If there is enough free high memory, PC-Cache will load itself into high memory.

PC-Cache Error Messages

Error, need a more current expanded memory driver.

Cause: The expanded memory manager you are using is not a supported version, or is having trouble with a cache larger than 100K.

Solutions:

- Install a Lotus/Intel/Microsoft-compatible expanded memory manager, version 3.2 or 4.0.

Fatal PC-Cache error, reboot!

Cause: This error occurs if initialization finds a fatal disk error.

Solution:

1. Remove memory-resident programs and unnecessary device drivers from memory until PC-Cache has enough memory to run. Use one of the following techniques:
   - Boot the computer from the emergency disk or another floppy disk containing DOS system files.
   - Many memory-resident programs include a command that will remove them from memory. (For example, typing `KILL` will remove most PC Tools memory-resident software.)
   - Remark out (REM) the memory-resident program commands in the AUTOEXEC.BAT and CONFIG.SYS files, and restart.
2. If you continue to have problems, use the Repair a Disk option of DiskFix with the Test Partition Information option turned on.
3. If this does not solve the problem:
   - Use the Surface Scan option of DiskFix. For a hard disk drive, use at least minimum pattern testing.
   - Use the Repair a Disk option of DiskFix again.
4. If the problem persists, see "If All Else Fails" at the end of the *Troubleshooting Data Recovery and System Utilities* chapter.

PC-Cache disk write error. Retry with same disk or Boot?

Cause : This error occurs if initialization finds a fatal disk error or if delayed writing to disk failed.

Solution: If the drive you are trying to cache is a removable drive, replace the disk in the drive and try again.

or

Check to see that the disk you are trying to cache is not write-protected. If it is, remove the write-protection or replace the disk. To prevent future occurrences, turn off write caching on that drive. If the problem is not caused by a write-protected disk, follow the preceding suggestions for the fatal PC-Cache error.

Missing PC-WNERR.OVL. Enhanced mode Windows will not be supported.

Cause: The PC-WNERR.OVL file is not in the PCTOOLS\SYSTEM directory.

Solution: Copy this file to the correct directory.

or

If you do not use Windows in enhanced mode, add the /OK option as the first option to the PC-Cache command-line when loading PC-Cache. This option tells PC-Cache to ignore the message and load PC-Cache without the required keystroke.

PC Format Error Messages

Physical unit unknown.

Cause: PC Format will not format a 1.44MB disk.

Solution: Try using DOS 3.3 or higher, and make sure the computer BIOS supports 1.44MB drives.

Unformat Error Messages

Error 0 – Write protect error

Cause: The disk is write-protected, or you have loaded Write Protection.

Solution: Remove the write protection or use Data Monitor to turn Write Protection off, and try again.

Error 2 – Drive not ready

Cause: DOS does not know that a floppy disk is in the drive. If you are unformatting a hard disk, the system area may be corrupt.

Solution:

For a floppy disk:

1. Make sure it the disk is inserted correctly and the latch closed.
2. If it is correctly inserted, use the Repair a Disk option of DiskFix.

For a hard disk:

1. Restart the computer from the emergency disk and use it to rebuild the partition table and boot sector.
2. If necessary, use the Repair a Disk option of DiskFix with the Test Partition Information option turned on.
3. If this does not solve the problem:
   - Use the Revitalize a Disk option of DiskFix to low-level format the disk. For a hard disk drive, use at least minimum pattern testing.
   - If your type of hard disk will not allow low-level formatting, DiskFix will let you know. Use the Surface Scan option of DiskFix instead, with at least minimum pattern testing.
   - Use the Repair a Disk option of DiskFix again to fix any system damage.
4. If the problem continues, replace the files needed to boot your disk.
   - Insert the emergency disk (or another floppy disk that contains the DOS SYS.COM file) and use the SYS command on the problem drive; for example, type `SYS C:`. (See your DOS manual for more about the SYS command.)
   - Then copy COMMAND.COM to the root directory of the problem disk. If there are multiple partitions on the problem disk, copy COMMAND.COM to the first boot partition.
5. If the problem persists, see "If All Else Fails" at the end of the *Troubleshooting Data Recovery and System Utilities* chapter.

Error 4 to 12 (DOS errors)

Cause:

4	CRC error
6	Seek error
8	Sector not found
10	Write fault
11	Read fault
12	Error 12 – General disk failure

Unformat encountered an error while accessing the data.

Solution: If you were using Unformat *with* a Mirror file:

1. Use the Repair a Disk option of DiskFix.

2. If the problem remains:
   - Use the Revitalize a Disk option of DiskFix to low-level format the disk. For a hard disk drive, use at least minimum pattern testing.
   - If your type of hard disk will not allow low-level formatting, DiskFix will let you know. Use the Surface Scan option of DiskFix instead, with at least minimum pattern testing.
   - Restart the computer and use the Repair a Disk option of DiskFix again to fix any system damage.
3. Use Unformat again. If the problem persists, try using Unformat without a Mirror file.

If you were using Unformat *without* a Mirror file:

1. Use the Repair a Disk option of DiskFix.
2. If the problem remains:
   - Use the Revitalize a Disk option of DiskFix to low-level format the disk. For a hard disk drive, use at least minimum pattern testing.
   - If your type of hard disk will not allow low-level formatting, DiskFix will let you know. Use the Surface Scan option of DiskFix instead, with at least minimum pattern testing.
   - Restart the computer and use the Repair a Disk option of DiskFix again to fix any system damage.
3. Use Unformat again and if the problem persists, see "If All Else Fails" at the end of the *Troubleshooting Data Recovery and System Utilities* chapter.

Can't process strange disk

Cause: Unformat cannot recognize the system information for this drive. The disk may have been formatted with a non-standard formatting utility; or you may be trying to unformat a network drive.

Solution:

- If you are using a partition driver, check to make sure it is installed and running.
- If your sector size is something other than 512 bytes, 1024 bytes (1K), or 2048 bytes (2K), Unformat will not work.
- If the drive is on a network, Unformat will not work.

Can't read disk system area

Cause: Unformat cannot access the system area.

Solution:

1. Use the Revitalize a Disk option of DiskFix to low-level format the disk. For a hard disk drive, use at least minimum pattern testing.
2. If your type of hard disk will not allow low-level formatting, DiskFix will let you know. Use the Surface Scan option of DiskFix instead, with at least minimum pattern testing.
3. Restart the computer.
4. Use Unformat again and if the problem persists, see "If All Else Fails" at the end of the *Troubleshooting Data Recovery and System Utilities* chapter.

Insufficient memory

Cause: You need more memory, or you need to remove some of your memory-resident programs.

Solution:

- Remove memory-resident programs and unnecessary device drivers from memory until Unformat has enough memory to run. Use one of the following techniques:
  - Boot the computer from the emergency disk or another floppy disk containing DOS system files.
  - Many memory-resident programs include a command that will remove them from memory. (For example, typing `KILL` will remove most PC Tools memory-resident software.)
  - Remark out (REM) the memory-resident program commands in the AUTOEXEC.BAT and CONFIG.SYS files, and restart.

Invalid drive specified

Cause: You specified a drive that does not exist or is not connected; or the drive has never been formatted; or the partition table information is lost or corrupt; or your disk requires a special partition driver which is not loaded.

Solution:

1. Specify the drive letter again, making sure it is a valid letter.
2. If you are trying to access a floppy disk, make sure it is inserted correctly and that the latch is closed.
3. Restart the computer from the emergency disk and use it to rebuild the partition table and boot sector.
4. If necessary, recopy the partition driver from the emergency disk or from its original disk onto your hard drive.
5. If this doesn't solve the problem, use the Repair a Disk option of DiskFix with the Test Partition Information option turned on.
6. If the problem persists, see "If All Else Fails" at the end of the *Troubleshooting Data Recovery and System Utilities* chapter.

Nothing to Unformat

Cause: Unformat found no files to process.

Solution: Restore the data from your most recent backup.

View Error Messages

Could not find the file: SPWNVIEW.EXE

Cause: You started View from the DOS prompt and are using the Network Courier Email system on a Novell NetWare server. NetWare searches a directory used by Network Courier before it searches the directory where PC Tools is installed.

Solution: Make PCTOOLS the first directory searched by using Novell's SYSCON utility to add the following command to the end of your system login script:

```
MAP INS S1:=C:\PCTOOLS
```

(If PC Tools is installed in a different directory, substitute that directory path and name for C:\PCTOOLS.)

Viewer Problems

Viewer does not work.

Cause: Some viewers do not work with expanded or extended memory.

Solution: You can prevent all the viewers from using expanded or extended memory. Type one of the following environment variable commands at the DOS prompt or add it to your AUTOEXEC.BAT file.

For expanded memory, use:

```
SET VWREMS=OFF
```

For extended memory, use:

```
SET VWRXMS-OFF
```

Data Recovery Terms

AUTOEXEC.BAT

A user-created text file containing commands that are executed automatically whenever you boot (start) your computer. Some typical functions of an AUTOEXEC.BAT file include logging on to a network file server and loading memory-resident programs.

The PC Tools Install program modifies your AUTOEXEC.BAT file to load selected PC Tools programs resident in memory, including PC Tools Desktop, Desktop Accessories, PC-Cache, and Data Monitor, and to run programs like Mirror.

Boot Sector

A particular location on all disks that contains a short operating system program which, along with the system files, enables the computer to load DOS from the disk. The boot sector also contains information that the computer needs in order to read from or write to the disk. If the boot sector is damaged, the computer will be unable to access the disk.

Booting

(Also known as rebooting.) Restarting the computer by pressing Ctrl Alt Del or turning the power off and then on again. This loads DOS from disk and executes the commands in the AUTOEXEC.BAT file, if any. DOS is usually loaded from the computer's hard disk, but it can also be loaded from a floppy disk that contains the system files.

Checksum

A numeric value derived from a file, used to identify the file. Checksums, along with other file information, are used by Central Point Anti-Virus to verify that files have not changed. Changed files may indicate infection by a virus, since executable files normally do not change.

CHKDSK

A DOS program used to check the integrity of a disk's file system. It will report and optionally repair some common disk problems.

NOTE *Use DiskFix to repair a disk rather than CHKDSK, because DiskFix can repair problems that CHKDSK cannot.*

Cluster

The smallest unit of disk space that can be allocated to a file. The size of a cluster varies according to the disk size.

CMOS

(Complementary metal-oxide semiconductor.) A battery-powered device that stores information about the system setup, such as the type of memory used in your computer and the type of hard drive and floppy drive it has.

COMMAND.COM

The DOS command processor, which is necessary to run DOS. Commands such as DIR, COPY, RENAME and CD are internal COMMAND.COM functions.

CONFIG.SYS

A user-created text file that tells DOS how to configure memory and load device drivers necessary for the normal operation of your computer. This file is read before your AUTOEXEC.BAT file when you boot (start) your computer.

DIR

The DOS command that displays information about the files in a directory.

Directory

A hierarchical structure used to group files on a disk. Initially, a disk contains a single directory, called the root directory. Within the root directory, you can create subdirectories in which you can store groups of files. Subdirectories can, in turn, contain subdirectories, and so on, for as many levels as you need. Directory Maintenance is a useful tool for managing complex directory structures.

FDISK

The DOS command used to create partitions on a hard disk.

WARNING Most versions of FDISK destroy all the data on the disk. Before you use FDISK, make sure you have a recent backup of the entire disk.

File Allocation Table (FAT)

A reserved area that DOS uses to indicate which clusters are used to store data for each file on a disk.

FORMAT

The DOS command that enables a disk to store data. There are two kinds of disk formats:

Low-level format: Prepares the surface of the disk to store data by writing the addresses that indicate individual sectors.

High-level format: Creates the system areas necessary for data storage on a drive.

When you use PC Format or the DOS FORMAT command, you are high-level formatting a drive. On a floppy disk, performing a high-level format also performs a low-level format.

Partition

The area on a hard disk that is reserved for use by a particular operating system. All hard drives have at least one partition. In addition, partitions can be used to divide a large hard disk into separate areas called logical drives. Each logical drive is assigned a drive letter, just as though it was a separate hard disk.

Partition Table

The information stored on all hard disks that specifies the disk location and length of each partition on the disk. If the partition table information is missing or damaged, you will receive the message "Invalid drive specification" when you try to access that drive. Partition table information can be repaired using DiskFix or restored from the emergency disk.

Root Directory

The first directory on a drive. The root directory contains the first level of subdirectories on the disk. The root directory can only contain a limited number of files and subdirectories. The number of entries depends on the type of disk. On a hard drive, for example, the limit is 512 entries in the root directory.

Sector

The smallest unit of disk space that can be read or written at a time.

SYS

The DOS command used to place the DOS system files on a disk, which enables that disk to be used to start (boot) the computer.

System Files

The DOS files required on the disk used to boot (start) your computer. Normally, these files are hidden and cannot be seen when you use the DOS DIR command. They are MSDOS.SYS and IO.SYS (or IBMDOS.COM and IBMBIO.COM for IBM computers). Another file sometimes referred to as a system file is the DOS command processor, COMMAND.COM.

Part 4

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Global PC Tools Command-Line Options

You can use these command-line options to control the way PC Tools programs appear on the screen. Just type them after the program name, either in your AUTOEXEC.BAT file or at the DOS prompt, along with any other options you are using. Some programs require you to separate multiple options with a space; for example:

```
PCSHELL /LE /BF
```

Additional command-line options used by individual programs and any special instructions for using options are described in the program's chapter.

TIP *Many of these options can be set for all PC Tools programs by using PC Config. See the* PC Config *chapter in* Part 1 Getting Started *in this volume.*

Option	Description
/25	Sets the screen display to 25 lines.
/28	Sets the screen display to 28 lines.
/43	Sets the screen display to 43 lines. This option is specific to EGA monitors, but can be used on some VGA monitors that emulate EGA display.
/50	Sets the screen display to 50 lines. This option should be used on VGA monitors only.
/60	Sets the screen display to 60 lines.
/BF	Uses the system's BIOS to manipulate fonts, instead of writing directly to the screen or other port. Try using this option if the characters displayed on your screen do not look like you think they should.
/BT	Displays a graphics mouse when running DOS PC Tools applications from within Windows.
/BW	Starts the program in black-and-white mode. This results in a better screen display when using a color card with a non-color monitor.
/FF	Does not suppress screen "snow" on CGA monitors. Normally, video "snow" is suppressed on CGA monitors so that your video display is sharper. This may slow scrolling on some monitors. If you have a CGA monitor and don't mind minor flickering or "snow" on your screen, use the /FF option.

Continued

Option	Description
/LCD	Used on computers with LCD displays (usually laptops) to set the colors.
/LE	Exchanges the left and right mouse-button functions to accommodate persons who prefer to use their mouse left-handed.
/IM	Disables the mouse in the PC Tools program, but does not affect keyboard functions. This option does not affect the mouse in your underlying program. Use this option if you have an old Microsoft mouse driver or experience problems with a mouse-supported application after hotkeying out of a memory-resident PC Tools program. ***NOTE*** *If you have problems with the mouse after entering a PC Tools program, it is most likely due to an older-style driver. You can use the /IM option, but we recommend that you ask your mouse manufacturer for an upgrade.*
/IN	Allows you to run a program in color even if a color monitor is not detected.
/NF	Disables the use of alternate fonts.
/NGM	Disables the graphics mouse character. When this option is selected, the mouse will be a solid box instead of an arrow. You might want to use this option if your mouse is running too slowly and you want to speed it up.
/MONO	Selects the default monochrome color set. This option has an effect similar to /BW. If you have an IBM monochrome monitor and using /BW does not improve your screen display, try /MONO.
/PS2	Performs a hard reset to the mouse driver to correct problems that can occur with your mouse, particularly if you are using a PS/2. This can slow performance on some machines. You can also use this option if your mouse does not work after you have been using Windows 3.0.

Memory-Resident Programs

What are TSRs?

Memory-resident, or terminate-and-stay-resident (TSR), programs are applications that remain loaded in your computer's memory while you use DOS or run other applications. Some of these programs can be "popped up" over the active program, like Task Switcher. Other TSRs do their jobs in the background (for example, network software, mouse drivers, and disk caches).

TSRs can save you time, but they can also be a source of frustration, especially if you use many of them. We have taken great pains to make Central Point TSRs well-behaved. These products should have few, if any, compatibility problems.

How Do TSRs Work?

TSRs don't really allow you do more than one job at a time. They still use the same processor as other programs. The only difference is they suspend the main application while they do their work, then return to the same place you left off. And you hope they do all this without a hitch.

TSRs are generally loaded through the AUTOEXEC.BAT or CONFIG.SYS file when you restart your computer, although they can also be loaded from the DOS command line.

For some TSRs to remain resident, a large amount of memory must be set aside. Unlike these, PC Tools programs require a small amount of memory. When activated, programs such as Task Switcher save an image of what your computer was doing at the time to the hard disk before loading the rest of their code. This allows them to use all the memory they need while active, yet take little memory while they are not active.

Solving TSR Problems

Generally, if you follow the manufacturer's instructions for installing the program, all works well. Sometimes, though, problems do arise. These are three common types of TSR conflicts:

- Insufficient memory
- Conflicts with other TSRs
- Conflicts with applications

If a problem occurs, try the troubleshooting steps in this chapter. They may save you a technical support call.

Insufficient Memory

Under DOS, TSRs and standard applications use the same type of memory: the lowest 640K, called conventional memory. The more TSRs you use, the more memory you take away from other applications—and large applications such as database managers, spreadsheets, and desktop publishing programs need all the memory they can get.

You can use the PC Tools program MI to check how much conventional memory is available. At the DOS prompt, type MI [Enter]. (For details on using MI, see *Part 3 Data Recovery and System Utilities* in this volume.)

If you don't have enough conventional memory to use an application, one solution is to use a memory manager such as QEMM or 386MAX to load TSRs into memory above 640K, called "loading high." All PC Tools TSRs can be loaded high to minimize use of conventional memory.

Another solution is to remove some of the TSRs from memory so that your application can run.

Removing Programs from Memory Temporarily

Use one of the following techniques to remove TSRs from memory temporarily. If TSRs are being loaded from the AUTOEXEC.BAT or CONFIG.SYS files, they will be reloaded the next time you restart your computer.

- Boot (start) the computer from the emergency disk or another floppy disk containing DOS system files.
- Many memory-resident programs include a command that will remove them from memory.

For example, typing `KILL` will remove many PC Tools memory-resident programs—as long as no other TSRs were loaded after them. Also, many PC Tools programs can be unloaded by using a command-line option. Finally, Desktop Accessories and Commute can be unloaded by choosing a menu option from within the program.

Removing PC Tools Programs from Memory Permanently

1. Start PC Tools Desktop from the hard drive on which it was installed.
2. Choose **Configure ➤ Startup Programs** from the Configure menu.
3. Select the program you wish to remove.
3. Select the option that removes the program. For example, if you wanted to remove memory-resident Commute, you would select the **Do not start Commute** option.
4. From the Configure Startup Programs window, choose **OK**, then exit.
5. Restart (reboot) your computer by pressing Ctrl Alt Del.

Removing Other Programs from Memory Permanently

1. Open your AUTOEXEC.BAT file with a text editor such as Notepads or EDLIN.
2. Type `REM` plus a space at the beginning of the lines that load the TSRs you wish to remove.
3. Save your changes.
4. Restart (reboot) your computer by pressing Ctrl Alt Del.

To put the programs back into memory, use a text editor to remove the REM and space at the beginning of the lines that load the TSRs you want to install.

Conflicts with Other TSRs

If a problem arises after loading a new TSR, it is probably conflicting with another TSR that is already loaded. Some symptoms of this are

- The computer hangs part way through the AUTOEXEC.BAT file, or when entering or exiting from the TSR.
- The TSR does not come up when its hotkeys are pressed.

The installation manual for your software (especially TSRs) should tell you if the AUTOEXEC.BAT file was changed for the new program. If the file was changed, the placement of the new TSR may conflict with another existing TSR. The loading order is critical for some memory-resident programs.

1. Open your AUTOEXEC.BAT file with a text editor such as Notepads or EDLIN. (It will be helpful to print out a copy of it at this point.)
2. Change the file to reflect the suggested loading order below.
   - DOS internal commands (such as PATH, PROMPT, and ECHO OFF)
   - DOS external commands (such as MODE, PRINT, and KEYB)
   - VSafe
   - BootSafe *
   - Mirror *
   - Network drivers
   - VWatch
   - Mouse drivers
   - PC-Cache
   - DriveMap
   - ITLFAX
   - Data Monitor
   - Keyboard enhancement programs (Superkey, Prokey, etc.)
   - Anything that does not fit the other categories
   - Commute
   - Central Point Scheduler for DOS
   - Task Switcher
   - Desktop Accessories
   - PC Tools Desktop

     * These are not TSRs, but should be run in the order shown.

NOTE *In some cases, print spoolers need to be loaded before the DOS PRINT command. If you still have difficulties, try reversing their loading order.*

3. If changing the loading order does not help, boot from the emergency disk or from another bootable floppy disk.

   This will clear out any memory-resident programs.
4. Start typing each line from your AUTOEXEC.BAT file, one line at a time.
5. After loading a TSR, test it to see if it works. If it does, go on to the next line.

   Through this process of addition and testing, you should find out which programs are conflicting.

When you find conflicting programs, changing their loading order may fix the problem. Or the programs might use the same hotkeys. If so, refer to the program's chapter or part for instructions on changing the hotkey.

6. Once you have identified the conflicting programs, use a text editor to modify your AUTOEXEC.BAT file, adjusting the loading order of the TSRs as necessary.

Conflicts with Applications

If the TSR you are using does not pop up over an application or correctly return you to it, the TSR may not be compatible with that particular program. Common conflicts include the following:

Graphics Mode

Some programs are designed to run in graphics mode. If an application is running in graphics mode and the TSR does not support graphics, the screen may fill with garbage characters, or the TSR may refuse to come up. To solve this problem, see if the program can be run in text mode. If it can, and this is acceptable to you, use your TSRs only from inside programs that are running in text mode.

EGA graphics cards can be another source of problems. A TSR cannot read the current video settings because many of the EGA's registers are write-only. This causes problems only when the TSR tries to restore the video display to the state it was in before the TSR was activated. The TSR does not have all the information it needs so it guesses. Often the correct screen is returned, but sometimes the color is wrong. The solution is to run your EGA graphics program in black and white mode or to not use your TSR while it is running.

Hotkey Conflict

The keystrokes that activate the TSR may also perform a function in the application you're trying to use. The best solution is to change the hotkey defined for the TSR. Task Switcher, Desktop Accessories, Commute, and Screen Blanker all have this capability. If you cannot change the hotkey for the TSR, see if the application allows you to change its keystrokes.

PC Tools Files

This chapter lists and describes PC Tools Version 8 files. The File Table helps you determine which files are required for your configuration and which you can safely delete if you need to free up disk space.

How to Use the File Table

The File Table is organized alphabetically. The description of each file indicates the directory where the file can be found, and information about the file's function.

The directory names used in the file table assume that you installed PC Tools into subdirectories, which contain the following types of files:

PCTOOLS: contains executable files that you can run from the command line by typing the file name

SYSTEM: contains other files needed by PC Tools executable files, for example, overlay (.OVL) files, Windows dynamic link library (.DLL) files, and online help (.HLP) files.

DATA: contains user-modifiable files, for example, configuration files, sample files, and files created by PC Tools programs. The PCTOOLS environment variable (SET PCTOOLS=) points to this directory.

If you configured PC Tools utilities for use with Windows, some files will also be installed in the Windows program directory:

WINDOWS: contains executable PC Tools programs for Windows plus files shared by these utilities, for example, .PIF files and some .DLL and .DRV files.

If you are using the File Table as a guide for deleting files, keep in mind that some programs may call others. For example, PC Tools Desktop calls DM (Directory Maintenance). If you delete DM.EXE, PC Tools Desktop will give you an error if you try to run it. It would be best to use the Uninstall program to remove whole programs. Other files that are safe to delete are:

Any file in the File Table labeled as a temporary file, as long as you are not running the program that created it.

Any .BAK or .SAV file. These are created by Desktop Accessories or PC Tools Desktop, respectively, when you edit a file and save it.

Any file that is a sample file. These are included as examples of files or to give you guidelines for developing your own files.

File Table

The table on the following pages lists and describes the files installed or created by PC Tools Version 8 programs.

File Name	Description
!!IMAGE.CPS	Temporary file in the \PCTOOLS\DATA directory that is the screen image saved by Screen Blanker when insufficient EMS memory exists.
*.~~~	Temporary files created by CPSHRINK during extraction of PC Tools compressed files.
*.BAK	Files in the \PCTOOLS\DATA directory or other designated directory that are original copies of files that have been edited and saved by Desktop Accessory programs.
*.CAT	Files in the \PCTOOLS\DATA directory that contains information about file placement on SCSI tapes.
*.CIS	Files in the \PCTOOLS\DATA directory that are created by Electronic Mail while separating CompuServe mail messages into individual files.
*.CPS	Files in the hidden \SENTRY directory that were files whose deletion was tracked by Delete Sentry. You can purge these files using Undelete.
*.CSF	Files in the \PCTOOLS\DATA directory that contain scripts created using Commute.
*.DAT	Files in a designated directory that store group appointments for the Appointment Scheduler.
*.DBF	Files in the \PCTOOLS\DATA or other designated directory that are Desktop Accessories database files.
*.DBU	Files in the \PCTOOLS\DATA or other designated directory that are unpacked Desktop Accessories database files.

File Name	Description
*.DIR	Files in the \PCTOOLS\DATA directory created by CP Backup containing directory information about specific backups. C920725A.DIR indicates that a backup operation was performed on drive C on 07/25/92 and was the first (A) operation of the day.
*.EML	Files in the \PCTOOLS\DATA directory that are created when you create new messages in Electronic Mail. The file's name reflects the mail service and number of the message. For example, CIS19488.EML is a CompuServe message number 19488.
*.ERR *.ERS	Files in the \PCTOOLS\DATA directory that are Electronic Mail messages that were not sent successfully. After Electronic Mail has notified you of the unsuccessful transmission, the file is changed from *.ERR to *.ERS.
*.ESL	Files in the \PCTOOLS\DATA directory that are created by Electronic mail while separating EasyLink messages into individual files.
*.FOR	Files in the \PCTOOLS\DATA directory that control custom display and printing of Desktop Accessories Databases.
*.HLP	Files in the \PCTOOLS\SYSTEM directory that contain help information for individual programs.
*.IDL	Files in the \PCTOOLS\SYSTEM directory used by Data Monitor's screen-blanking module.
*.IEx	Files in the \PCTOOLS\DATA directory that contain manual file selections for setups created in CP Backup. The x indicates the drive whose files were selected.
*.MCI	Files in the \PCTOOLS\DATA directory that are created by Electronic Mail while separating MCI Mail messages into individual files.
*.PIF	Files in the \WINDOWS or \PCTOOLS\SYSTEM directory that contain settings used by PC Tools DOS-based utilities to run under Windows.
*.PRT	Data files in the \PCTOOLS\DATA directory that are outgoing messages created in Electronic Mail.
*.REC	Data files in the \PCTOOLS\DATA directory that are Database index and format files.
*.RPB *.RPC	Files in the \PCTOOLS\DATA directory that are backup reports indicating the drive, date, and sequence. For example, C920725A.RPB indicates that a Backup was performed on drive C on 07/25/92 and was the first (A) operation of the day. .RPC files are Compare reports.

File Name	Description
*.SAV	Files in the current directory that are original copies of files that have been edited and saved in PC Tools Desktop file editor.
*.SEC	Encrypted copies of files in any directory processed with the Delete Original Files option turned off in PC Secure or the No Delete option selected in PC Shell.
*.SET	Files in the \PCTOOLS\DATA directory that contain selections made in CP Backup's Include/Exclude window to create setup files for the program.
*.TEL	Files in the \PCTOOLS\DATA directory that are Modem Telecommunications phone number lists.
*.TM	Files in the \PCTOOLS\DATA directory that are Appointment Scheduler files.
*.TMM	Files in the \PCTOOLS\DATA directory that contain schedule information for CPAV, CP Backup, DiskFix, Schedule, and Commute. When CPSCHED is memory resident, it handles scheduled operations using these files.
*.TMP	Temporary files in the \PCTOOLS\DATA or the current directory that are backup files.
*.TXT	Data files in the \PCTOOLS\DATA directory that are Notepads files. These files can represent incoming messages from an Electronic Mail service. In this latter case, the file's name reflects the service from which the message came, the date it was received, and the sequence in which it was received. For example, ESL092892A.TXT is a file that was received from EasyLink on 09/28/92 and was the first message (A) to be received that day.
*.VTC	Files in the \PCTOOLS\DATA directory that are tape volume catalog tables for SCSI tapes.
*.XXX	Files in the \PCTOOLS\DATA or another designated directory that are original Desktop Accessories database files before their fields are edited or other databases are appended to them.
*KNP.TMP	Temporary file in the current directory that is created during encryption or decryption.
*W.PIF	Files in the \PCTOOLS\SYSTEM directory that contain information for scheduling Desktop and DiskFix events to be handled while Windows is running.
_SLIDES.DOC	File in the \PCTOOLS\DATA directory that contains information presented in the "While you wait" information box during installation of PC Tools.

File Name	Description
ACTIVITY.CPS	File in the \PCTOOLS\DATA directory that is the activity log used by CPAV and Bootsafe.
ADAPTEC.TXT	File in the \PCTOOLS\DATA directory that contains information about the Adaptec device drivers, ASPI*.SYS, supplied with PC Tools.
ADVICE.HLP	File in the \PCTOOLS\SYSTEM directory that is the online troubleshooting help accessed by the Advice button.
APSELECT.DOC	File in the \PCTOOLS\SYSTEM directory created during installation that indicates which PC Tools applications have been installed.
APSELECT.ENG	File in the \PCTOOLS\DATA directory that contains information used by Install to determine which files to install during a custom installation and which files to delete if installing over an older version of PC Tools.
ASPI2DOS.SYS	File in the \PCTOOLS\SYSTEM directory required by CP Backup when backing up to a tape drive connected to an Adaptec 152x SCSI Host Adapter.
ASPI4DOS.SYS	File in the \PCTOOLS\SYSTEM directory required by CP Backup when backing up to a tape drive connected to an Adaptec 154x SCSI Host Adapter.
ASPIEDOS.SYS	File in the \PCTOOLS\SYSTEM directory required by CP Backup when backing up to a tape drive connected to an Adaptec 174x SCSI Host Adapter in an EISA computer.
AUTOEXEC.CPS	Backup file in the root directory of your startup volume that is a copy of the AUTOEXEC.BAT file before Install modified it.
BINSTALL.EXE	File in the \PCTOOLS directory used for installing PC Tools from a network to a local workstation's HARD drive, using a pre-defined .ICF configuration file.
BOOTSAFE.EXE	File in the \PCTOOLS directory that checks for boot-sector viruses.
BUFFER64.CFG	Temporary file in the current directory that is created by the Appointment Scheduler when an alarm is activated.
CALC.TMP	Temporary file in the \PCTOOLS\DATA directory that stores Algebraic Calculator tape computations.
CHKLIST.CPS	File in all directories that is created and used by CPAV programs that contains information about files in each of the directories.
CINSTALL.EXE	File in the \PCTOOLS directory that allows a network administrator to create sets of custom PC Tools installation diskettes.

File Name	Description
CIS.SCR	File in the \PCTOOLS\DATA directory that is a sample CompuServe "log on" script.
CMU@@CSF.TMP	Temporary file in the \PCTOOLS\DATA directory that is created by the Commute script editor.
COMMDIS.DRV	File in the \WINDOWS directory required by Commute as a replacement display driver. If you delete this file, be sure to edit Window's SYSTEM.INI to use the original driver, or Windows may not work correctly.
COMMHST.EXE	File in the \PCTOOLS\SYSTEM directory required by Commute during sessions where you "call and give control."
COMMKBD.DRV	File in the \WINDOWS directory that is a replacement keyboard driver for Windows. If you delete this file be sure to edit Window's SYSTEM.INI to use the original driver, or Windows may not work correctly.
COMMMAN.EXE	File in the \PCTOOLS\SYSTEM directory required by the Commute main program. Do not delete this file if you wish to use Commute.
COMMMAP.EXE	File in the \PCTOOLS\SYSTEM directory required for the configuration of the DriveMap drive mapper.
COMMMOU.DRV	File in the \WINDOWS directory that is a replacement mouse driver for Windows. If you delete this file, be sure to edit Window's SYSTEM.INI to use the original driver, or Windows may not work correctly.
COMMREM.EXE	File in the \PCTOOLS\SYSTEM directory required by Commute to "call and take control" of another computer.
COMMSML.EXE	File in the \PCTOOLS directory that is used in conjunction with the main Commute program, but uses a smaller portion of memory when resident.
COMMSWP*.IMG	Temporary file in the \PCTOOLS\DATA directory that is created when Commute swaps out conventional memory to load overlay files.
COMMUTE.CFG	File in the \PCTOOLS\DATA directory that contains configuration information for Commute.
COMMUTE.EXE	File in the \PCTOOLS directory that is the main Commute program.
COMMUTE.GCL	File in the \PCTOOLS\DATA directory that is created when you make a Give Control list in Commute.
COMMUTE.LOG	File in the \PCTOOLS\DATA directory that contains the Commute activity log.

File Name	Description
COMMUTE.MDM	File in the \PCTOOLS\DATA directory used to configure Commute. This file contains a list of supported modems, along with their initialization strings.
COMMUTE.TCL	File in the \PCTOOLS\DATA directory that is created when you make a Private Call list in Commute.
COMMUTE.TXT	File in the current directory that contains the Commute activity log in ASCII text format.
COMMVXD.386	File in the \PCTOOLS\SYSTEM directory that is a replacement driver required by Commute when using Windows in Enhanced mode. If you delete this file, be sure to edit Window's SYSTEM.INI to use the original driver, or Windows may not work correctly.
COMMWIN.OVL	File in the \PCTOOLS\SYSTEM directory required by Commute for you to run Windows on the computer you are controlling.
COMPRESS.CFG	File in the \PCTOOLS\DATA directory that contains Compress configuration information, including directory and file ordering you specify.
COMPRESS.EXE	File in the \PCTOOLS directory that is the main Compress program.
COMPRESS.RPT	Data file in the root directory of the drive being compressed that contains information such as sorting option used, Compress technique, and other options used for that drive.
CONFIG.CPS	Backup file in the root directory of your startup volume that is a copy of the original CONFIG.SYS file before Install modified it.
CONFIG.EXE	File in the \PCTOOLS\SYSTEM directory used by Install to help you configure PC Tools for use on your computer.
CONTROL.FIL	File in the hidden \SENTRY directory that contains information about files whose deletion was tracked by Data Monitor's Delete Sentry. Required by Undelete to recover these files.
CONVERT.EXE	File in the \PCTOOLS\SYSTEM directory that converts Norton and Fastback setup files to CP Backup setup files.
CPAV.EXE	File in the \PCTOOLS directory that is the Central Point Anti-Virus program.
CPAV.INI	File in the \PCTOOLS\DATA directory that contains configuration information for CPAV.EXE.
CPB.OVL	File in the \PCTOOLS\SYSTEM directory that contains overlays for the Scheduler.

File Name	Description
CPB1.OVL CPB2.OVL	Files in the \PCTOOLS\SYSTEM directory for performing DOS floppy backup and restore operations.
CPB3.OVL CPB4.OVL	Files in the \PCTOOLS\SYSTEM directory for performing floppy backup and restore operations using high or medium speeds.
CPB5.OVL	File in the \PCTOOLS\SYSTEM directory for directory and history file processing.
CPB6.OVL	File in the \PCTOOLS\SYSTEM directory that formats floppies during backup operations for low-speed DOS backups only.
CPB62.OVL	File in the \PCTOOLS\SYSTEM directory required by CP Backup to restore Low-speed backups made with Version 6 PC Backup or CP Backup.
CPBA1540.OVL	File in the \PCTOOLS\SYSTEM directory required by CP Backup for backup and restore operations to SCSI or QIC-02/36 tape drives.
CPBA1640.OVL	File in the \PCTOOLS\SYSTEM directory required by CP Backup for backup and restore operations to SCSI or QIC-02/36 tape drives.
CPBACKUP.CFG	File in the \PCTOOLS\DATA directory that contains program configuration settings.
CPBACKUP.EXE	File in the \PCTOOLS directory that is the main CP Backup for DOS program.
CPBACKUP.MSG	File in the \PCTOOLS\SYSTEM directory that contains screen text and bottom line help messages for CP Backup.
CPBASPI.OVL	File in the \PCTOOLS\SYSTEM directory required by CP Backup for backup and restore operations to SCSI or QIC-02/36 tape drives.
CPBCE.OVL	File in the \PCTOOLS\SYSTEM directory required by CP Backup for backup and restore operations to SCSI or QIC-02/36 tape drives.
CPBCP.OVL	File in the \PCTOOLS\SYSTEM directory required by CP Backup for backup and restore operations to SCSI or QIC-02/36 tape drives.
CPBDIR.EXE	File in the \PCTOOLS directory that is used to obtain information about High and Medium speed backup disks.
CPBFILE.VM*d* CPBTREE.VM*d*	Temporary files in the \PCTOOLS\DATA directory or the directory indicated by the CPTMP environment variable that contain information for the directory tree. The *d* variable indicates a drive letter.

File Name	Description
CPBFMTB.OVL	File in the \PCTOOLS\SYSTEM directory required by CP Backup for backup and restore operations to SCSI or QIC-02/36 tape drives.
CPBFMTR.OVL	File in the \PCTOOLS\SYSTEM directory required by CP Backup for backup and restore operations to SCSI or QIC-02/36 tape drives.
CPBH.OVL	File in the \PCTOOLS\SYSTEM directory that is the online help engine and performs configuration processing.
CPBLDLST.CPS	File in the \PCTOOLS\DATA directory that lists the most recent set of files deleted using the Drag and Drop feature of PC Tools Desktop.
CPBNWLIB.OVL	File in the \PCTOOLS\SYSTEM directory required by CP Backup for backup and restore operations to a SCSI or QIC-2/38 tape drive connected to a Novell file server.
CPBQ3.OVL CPBQ4.OVL CPBQ5.OVL	Files in the \PCTOOLS\SYSTEM directory for performing tape backup and restore operations in QIC-40/80 compatible format.
CPBREMOT.OVL	File in the \PCTOOLS\SYSTEM directory required by CP Backup for backup and restore operations to a SCSI or QIC-02/38 tape drive connected to a Novell file-server.
CPBSCSI.OVL	File in the \PCTOOLS\SYSTEM directory required by CP Backup for backup and restore operations to SCSI or QIC-02/36 tape drives.
CPBSDEV.OVL	File in the \PCTOOLS\SYSTEM directory required by CP Backup for backup and restore operations to SCSI or QIC-02/36 tape drives.
CPBT3.OVL CPBT4.OVL CPBT5.OVL	Files in the \PCTOOLS\SYSTEM directory for performing backup and restore operations in CPS proprietary format to a QIC-40/80 tape drive. CPBT3.OVL is also required when using QIC format.
CPBV.OVL	File in the \PCTOOLS\SYSTEM directory that is the CP Backup virus scanning and reporting program.
CPBX.OVL	File in the \PCTOOLS\SYSTEM directory that is the engine for Express mode in CP Backup for DOS.
CPS*.FIL	Files in the current directory that are created from free clusters by Undelete using the Scan for Data Types or Scan for Contents disk scan options.
CPS*.TRE	Files in the \PCTOOLS\DATA directory that store the tree lists. If the asterisk (*) in the file name is replaced with a letter, it indicates a local drive. A number indicates a network drive.

File Name	Description
CPS.SCR	File in the \PCTOOLS\DATA directory that is a sample CPS bulletin board "log on" script.
CPSCHED.EXE	File in the \PCTOOLS directory that schedules unattended Commute, CPAV, or CP Backup sessions.
CPSCHED.OVL	File in the \PCTOOLS\SYSTEM directory required by CPSCHED.EXE.
CPSCOLOR.DAT	File in the \PCTOOLS\DATA directory that contains global configuration settings for PC Tools programs.
CPSDOS.GRP	File in the \PCTOOLS\SYSTEM directory that provides the PC Tools programs group for the Windows Program Manager.
CPSFF*.TMP	Temporary file in the \PCTOOLS\DATA directory that stores file and directory information.
CPSHELP.OVL	File in the \PCTOOLS\SYSTEM directory that is the engine for all online help.
CPSHRINK.EXE	File in the \PCTOOLS\SYSTEM directory required to install or decompress the compressed files on the PC Tools program disks.
CPSICONS.DLL	File in the \WINDOWS directory that contains icons for the PC Tools program group in the Windows Program Manager.
CPSMAIN.FNT	File in the \PCTOOLS\SYSTEM directory that contains remapped fonts for use in graphics mode.
CPSMM.BIN	File in the \PCTOOLS\SYSTEM directory that allows specific PC Tools programs to access expanded memory.
CPSPRINT.DAT	File in the \PCTOOLS\DATA directory that contains printer definitions for the Appointment Scheduler.
CPSTOOLS.INI	File in the \PCTOOLS\DATA directory generated during installation that contains group names and file specifications for search groups.
CPTASK.COM	File in the \PCTOOLS directory that provides PC Tools' task-switching capabilities.
CPTASK.IM*	Temporary file in the \PCTOOLS\DATA directory that contain system images of tasks swapped out of memory by CPTASK. CPTASK.IMA is always the DOS prompt.
CPTASK.OVL	File in the \PCTOOLS\SYSTEM directory required by CPTASK to provide task-switching ability.
*d*_BACK.DIR	Temporary files in the \PCTOOLS\DATA directory or the directory indicated by the CPTMP environment variable that contain support information for incremental backups. The *d* variable indicates a drive letter.

File Name	Description
DA.BAT	File in the \PCTOOLS directory that calls the Desktop Accessories program.
DAILY.SET	File in the \PCTOOLS\DATA directory preconfigured for use by CP Backup to create an Incremental backup of the C: drive to the default backup device.
DATABASE.SET	File in the \PCTOOLS\DATA directory, used by CP Backup to select and back up data files created by popular database programs.
DATAMON.EXE	File in the \PCTOOLS directory that is the main Data Monitor program. Undelete accesses files created by the delete tracking module of this program.
DATAMON.INI	File in the \PCTOOLS\DATA directory that is the configuration file for Data Monitor.
DE.EXE	File in the \PCTOOLS directory that is the program file for the PC Tools Disk Editor.
DESK.OVL	File in the \PCTOOLS\SYSTEM directory that contains the overlays for Desktop Accessories.
DESKTO?.THM	Temporary file in the \PCTOOLS\DATA directory that contains the swapped memory when the resident version of Desktop Accessories is activated.
DESKTOP.CFG	File in the \PCTOOLS\DATA directory that is the main Desktop Accessories configuration file.
DESKTOP.DOV	Temporary file in the \PCTOOLS\DATA directory that is created by Desktop Accessories when the program is resident in memory.
DESKTOP.EXE	File in the \PCTOOLS directory that is the main Desktop Accessories program.
DESKTOP.IMG	Temporary file in the \PCTOOLS\DATA directory that contains current video information at the time the resident version of Desktop Accessories is activated.
DESKTOP.MSG	File in the \PCTOOLS\SYSTEM directory that contains bottom line help messages for the Desktop Accessories..
DICT.SPL	File in the \PCTOOLS\DATA directory that is the dictionary for the Notepads spelling checker.
DISKFIX.EXE	File in the \PCTOOLS directory that is the main DiskFix program.
DISKFIX.LOG	Data file in the root directory that contains a log report of the most recent Surface Scan or Revitalize a Disk operation.

File Name	Description
DISKFIX.OLD	Data file in the root directory that is a copy of the prior DISKFIX.LOG log file.
DISKFIX.OV1	File in the \PCTOOLS\SYSTEM directory that is the overlay file for Repair a Disk operations.
DISKFIX.OV2	File in the \PCTOOLS\SYSTEM directory that is the overlay file for Surface Scan and Revitalize operations.
DISKFIX.OV3	File in the \PCTOOLS\SYSTEM directory required by DiskFix.
DISKFIX.RPT	File in the current or a user-specified directory that is a report of the last Repair a Disk operation.
DM.EXE	File in the \PCTOOLS directory that is the main Directory Maintenance program.
DM.PRM	Temporary file in the \PCTOOLS\DATA directory that PC Tools Desktop creates when it calls Directory Maintenance.
DMTEMP*.DM	Temporary file in the \PCTOOLS\DATA directory that stores directory information.
DRIVEMAP.CFG	File in the \PCTOOLS\DATA directory that contains configuration information for mapped drives using DriveMap.
DRIVEMAP.EXE	File in the \PCTOOLS directory that provides local mapping of other workstations' drives when connected to a Novell network.
EDISK.EXE	File in the \PCTOOLS directory that creates the PC Tools Emergency Disk.
EMAIL.CFG	File in the \PCTOOLS\DATA directory that is the Electronic Mail configuration file.
EMAIL.TM	File in the \PCTOOLS\DATA directory that contains schedule information for unattended sending and receiving of Electronic Mail.
EPSON.PRO	File in the \PCTOOLS\DATA directory containing sample printer macros for Epson printers.
ESL.SCR	File in the \PCTOOLS\DATA directory that is a sample EasyLink "log on" script.
EXCEPT.CPS	File in the \PCTOOLS\DATA directory that is the Exception List for Central Point Anti-Virus.
FAX.PHO	File in the \PCTOOLS\DATA directory containing the Fax Telecommunications phone list.
FAX8.CFG	File in the \PCTOOLS\DATA directory that is the configuration file for Fax Telecommunications.

File Name	Description
FF.EXE	File in the \PCTOOLS directory that is the main FileFind program. PC Tools Desktop accesses FileFind.
FILEATTR.EXE	File in the \PCTOOLS directory that is a utility to change the attributes of a file or group of files.
FILECHK.EXE	File in the \PCTOOLS directory that checks for file fragmentation. Also reports lost clusters and cross-linked files.
FILEDATE.EXE	File in the \PCTOOLS directory that is a utility to change the date and time stamp of a file or group of files.
FILEDEFS.ENG	File in the \PCTOOLS\DATA directory containing information about PC Tools files on the original diskettes.
FILEFIX.EXE	File in the \PCTOOLS directory that is the main File Fix program. FileFix repairs damaged Word Perfect documents, as well as spreadsheet and database files created by many popular programs.
FILEFIX.OVL	File in the \PCTOOLS\SYSTEM directory required by FileFix for repairing Word Perfect files.
FN*	Temporary file in the current directory that stores report information while you are using File Fix to recover a Lotus 1-2-3 or Symphony file.
FORMAT.BAT	File in the \PCTOOLS directory that Install creates to run PC Format instead of DOS FORMAT.
HEXCALC.TMP	Temporary file in the \PCTOOLS\DATA directory that stores values in the Programmer's Calculator registers.
HPLJF.PRO	File in the \PCTOOLS\DATA directory containing sample printer macros for the HP LaserJet printer.
INSTALL.EXE	File in the \PCTOOLS directory that is the main Install program.
ISCPSTSR.EXE	File in the \PCTOOLS\SYSTEM directory used by network administrators to ensure that client workstations have resident virus-protection installed.
ITLFAX.EXE	File in the \PCTOOLS directory that is the Fax Telecommunications link to Intel CAS-compatible fax boards.
KILL.EXE	File in the \PCTOOLS directory that removes PC Tools memory-resident programs from memory.
LEARN.PRO	File in the \PCTOOLS\DATA directory that contains macros created using Learn mode in the Macro Editor.
LETTER.FOR	File in the \PCTOOLS\DATA directory that is a sample form letter in Notepads format for use with names and addresses in a database.

File Name	Description
LIBPCT00.DLO	File found in the \PCTOOLS\SYSTEM directory required for PC Tools programs to run.
LONG.MNC	File in the \PCTOOLS\DATA directory that is an advanced-level configuration file for the PC Tools Desktop menus and Function keys.
LOST*.SUB	Files in the root directory that are subdirectories recovered by DiskFix Repair a Disk when Save is chosen in the lost clusters error dialog box.
MACROS.DOV	Temporary file in the \PCTOOLS\DATA directory that stores playback information when macro files are activated.
MCI.SCR	Configuration file in the \PCTOOLS\DATA directory that is a sample MCI Mail "log on" script.
MENUCONV.EXE	File in the \PCTOOLS\SYSTEM directory that converts Direct Access menus to the PC Tools menu system.
MENUED.EXE	File in the \PCTOOLS\SYSTEM directory that allows creation and editing of PC Tools Desktop's menus.
MI.COM	File in the \PCTOOLS directory that is the main Memory Information program.
MIRORSAV.FIL	File in the root directory containing information used by Unformat to locate MIRROR.FIL and MIRROR.BAK during recovery of damaged or formatted disks.
MIRROR.BAK	File in the root directory that is a copy of the previous MIRROR.FIL information.
MIRROR.COM	File in the \PCTOOLS directory that is the main Mirror program. DiskFix, Undelete, Unformat, and PC Tools Desktop can all access files created by Mirror during its operation.
MIRROR.FIL	File in the root directory created by Mirror that contains an image of the disk's boot sector, FAT, and root directory. This is used to recover damaged or formatted disks or deleted files.
MONOUMB.386	File in the \WINDOWS directory used by RAMBoost.
MONOUMB2.386	File in the \WINDOWS directory used in the Windows SYSTEM.INI to exclude use of a specific portion of the Upper Memory Blocks.
NETMSG.EXE	File in the \PCTOOLS directory that sends messages on supported networks.
PANA.PRO	File in the \PCTOOLS\DATA directory containing sample printer macros for Panasonic printers.
PARK.COM	File in the \PCTOOLS directory that is a stand-alone utility to park hard drive heads (can be used in batch files).

File Name	Description
PARTNSAV.FIL	File on the Emergency Disk that DiskFix uses to restore a hard drive's partition table, boot sector, and CMOS information.
PC-BENCH.OVL	File in the \PCTOOLS\SYSTEM directory that is a speed test for disk-caching programs.
PC-CACHE.COM	File in the \PCTOOLS directory that is the main PC-Cache program.
PC-CNV1.OVL	File in the \PCTOOLS\SYSTEM directory that is the overlay file for a conventional memory cache.
PC-EXP1.OVL	File in the \PCTOOLS\SYSTEM directory that is the overlay file for an expanded memory cache of less than 300K.
PC-EXP2.OVL	File in the \PCTOOLS\SYSTEM directory that is the overlay file for an expanded memory cache of 300K or larger.
PC-EXT1.OVL	File in the \PCTOOLS\SYSTEM directory that is the overlay file for an extended memory cache of less than 300K.
PC-EXT1X.OVL	File in the \PCTOOLS\SYSTEM directory for alternate memory access methods for an extended memory cache smaller than 300k.
PC-EXT2.OVL	File in the \PCTOOLS\SYSTEM directory that is the overlay file for an extended memory cache of 300K or larger.
PC-EXT2X.OVL	File in the \PCTOOLS\SYSTEM directory for alternate memory access methods for an extended memory cache of 300k or larger.
PC-STAT.OVL	File in the \PCTOOLS\SYSTEM that displays PC-Cache status and statistics.
PC-WNERR.OVL	File in the \PCTOOLS\SYSTEM that provides the capability for PC-Cache messages to appear in Windows 3.1.
PCAPPLIC.CFG	File in the \PCTOOLS\DATA directory used by Install to search for and add applications to PC Tools Desktop's program list.
PCCONFIG.EXE	File in the \PCTOOLS directory that controls global PC Tools program configuration options.
PCFORM.EXE	File in the \PCTOOLS directory that is the PC Format engine. PC Shell accesses this program.
PCFORMAT.EXE	File in the \PCTOOLS directory that is the interface for the PC Form program. PC Shell accesses this program.
PCRUN.COM	File in the \PCTOOLS\SYSTEM directory that runs programs in resident mode.
PCSECURE.CFG	File in the \PCTOOLS\DATA directory that stores PC Secure configuration information.

File Name	Description
PCSECURE.EXE	File in the \PCTOOLS directory that is the main PC Secure file encryption program.
PCSHELL.CFG	File in the \PCTOOLS\DATA directory that is the main PC Tools Desktop configuration file.
PCSHELL.EXE	File in the \PCTOOLS directory that is the main PC Tools Desktop program.
PCSHELL.IMG	Temporary file in the \PCTOOLS\DATA directory that is the program image file for memory-resident PC Tools Desktop.
PCSHELL.MNA	File in the \PCTOOLS\SYSTEM directory that contains information about all menu and function key selections for editing PC Tools Desktop's menus. This file is required to use the PC Tools Desktop menu editor.
PCSHELL.MND	File in the \PCTOOLS\SYSTEM directory that is a default menu configuration file for PC Tools Desktop.
PCSHELL.MNT	File in the \PCTOOLS\DATA directory used by PC Tools Desktop to quickly read menu information into memory.
PCSHELL.OVL	File in the \PCTOOLS\SYSTEM directory that is the PC Tools Desktop overlay file.
PCSHELL.RMG	Temporary file in the \PCTOOLS\DATA directory that stores current PC Tools Desktop information when you launch another program.
PCSHELL.THM	Temporary file in the \PCTOOLS\DATA directory that is the swapped memory file for memory-resident PC Tools Desktop
PCSHELL.TMP	Temporary file in the \PCTOOLS\DATA directory that passes information between PC Tools Desktop and applications run from it.
PCSHOV2.EXE	File in the \PCTOOLS\SYSTEM directory that is used internally by PC Tools Desktop.
PCT*.FIX	Files in the root directory that are lost cluster chains saved as files by DiskFix Repair a Disk when Save is chosen in the lost clusters error dialog box. These files can be Viewed, and deleted if they do not contain recognizable data.
PCTCP.$$$	Temporary file in the \PCTOOLS\DATA directory that is the clipboard file created by the file editor to store cut and paste information.
PCTDFIX.DB	File created on a drive DiskFix is not repairing that stores information about the original state of the drive being repaired by DiskFix. This file is needed to undo repairs later.

File Name	Description
PCTOOLS.BAT	File in the \PCTOOLS directory that is the program list for PC Tools utilities.
PCTOOLS.CFG	File in the \PCTOOLS\DATA directory that is the configuration file used when starting PC Tools programs by typing PCTOOLS at the DOS prompt.
PCTOOLS.ICF	File in the \PCTOOLS\DATA directory containing configuration information used by BINSTALL to install PC Tools from a network.
PCTOOLS.PCX	File in the \PCTOOLS\DATA directory that contains the PC Tools logo for the fax cover page.
PCTRACKR.DEL	Hidden file in the drive's root directory that Undelete uses to recover deleted files that are protected by Delete Tracker. This file can be created by Mirror or Data Monitor.
PCTWPX.$$$	Temporary file in the \PCTOOLS\DATA directory that the PC Tools Desktop file editor creates to save file information above the current display window.
PCTWPY.$$$	Temporary file in the \PCTOOLS\DATA directory that the PC Tools Desktop file editor creates to save file information below the current display window.
PHONE.TEL	File in the \PCTOOLS\DATA directory that contains the phone number list for Modem Telecommunications and Electronic Mail.
PROGMAN.CPS	Backup file in the \WINDOWS directory that is a copy of the PROGMAN.INI file before Install modified it to include the PC Tools program group.
PROPTR.PRO	File in the \PCTOOLS\DATA directory containing sample printer macros for the IBM ProPrinter.
QIC.TMP	Temporary file in the \PCTOOLS\DATA or the directory indicated by the CPTMP environment variable that contains information for the QIC-compatible directory tree.
RAMBOOST.EXE	File in the \PCTOOLS directory that controls use of Upper Memory Blocks, as part of PC Tools memory optimization.
RAMBOOST.INI	File in the \PCTOOLS\DATA directory that contains configuration information for RAMBOOST.EXE.
RAMSETUP.EXE	File in the \PCTOOLS directory that allows you to manually configure Upper Memory Blocks for use by RAMBOOST.EXE.
RAMSETUP.INI	File in the \PCTOOLS\DATA directory containing configuration information for RAMSETUP.EXE.

File Name	Description
READCIS.SCR	File in the \PCTOOLS\DATA directory that is a sample script file for retrieving mail sent via CompuServe.
READESL.SCR	File in the \PCTOOLS\DATA directory that is a sample script file for retrieving mail sent via EasyLink.
READMCI.SCR	File in the \PCTOOLS\DATA directory that is a sample script file for retrieving mail sent via MCI Mail.
README.EXE	File in the \PCTOOLS directory that displays or prints the README.TXT file included with PC Tools.
README.TXT	File in the \PCTOOLS directory that describes program features not documented in the manuals.
REPORT.CPS	File in the \PCTOOLS\DATA directory that is the virus scan report from CPAV.
SAMPLE.DBF	File in the \PCTOOLS\DATA directory that is a sample Databases file.
SAMPLE.FAX	File in the \PCTOOLS\DATA directory that is a sample Fax Telecommunications message.
SAMPLE.FOR	File in the \PCTOOLS\DATA directory that is a sample Databases form file.
SAMPLE.MAI	File in the \PCTOOLS\DATA directory that is a sample Electronic Mail message file.
SAMPLE.OUT	File in the \PCTOOLS\DATA directory that is a sample Outlines file.
SAMPLE.PRO	File in the \PCTOOLS\DATA directory that is a sample macro file.
SAMPLE.TLX	File in the \PCTOOLS\DATA directory that is a sample Telex message.
SAMPLE.TM	File in the \PCTOOLS\DATA directory that is a sample Appointment Scheduler file.
SAMPLE.TXT	File in the \PCTOOLS\DATA directory that is a sample Notepads file.
SCHEDULE.EXE	File in the \PCTOOLS directory that is the master scheduling program. It can schedule events in Commute, CP Backup, and CPAV.
SCHEDULE.OV1	File in the \PCTOOLS\SYSTEM directory required by SCHEDULE.EXE.
SCHEDULE.OVL	File in the \PCTOOLS\SYSTEM directory required by SCHEDULE.EXE.

File Name	Description
SCICALC.TMP	Temporary file in the \PCTOOLS\DATA directory that stores values in the Scientific Calculator's registers.
SENDCIS.SCR	File in the \PCTOOLS\DATA directory that is a sample script file for sending mail via CompuServe.
SENDESL.SCR	File in the \PCTOOLS\DATA directory that is a sample script file for sending mail via EasyLink..
SENDMCI.SCR	File in the \PCTOOLS\DATA directory that is a sample script file for sending mail via MCI Mail.
SETUP.EXE	File in the \PCTOOLS\SYSTEM directory that is used to reconfigure a previous installation of PC Tools Version 8.
SHORT.MNC	File in the \PCTOOLS\DATA directory that is a beginning-level configuration file for the PC Tools Desktop menus and Function keys.
SI.EXE	File in the \PCTOOLS directory that is the main System Information program. This program is accessed by PC Shell.
SI.RPT	File created in the current directory containing SI benchmark and selected system information, when print to disk file is chosen.
SI.TMP	Temporary file in the current directory that is created during System Information benchmark testing. PC Tools Desktop accesses this program.
SPREAD.SET	File in the \PCTOOLS\DATA directory used by CP Backup, which is pre-configured to back up data files created by popular spreadsheet programs.
SUBDIR.*	Files in the drive's root directory that contain first-level subdirectories recovered during an unformat without Mirror. The original file names in these directories are intact.
SWAPDT.COM	File in the \PCTOOLS directory that swaps the resident portion of Desktop Accessories to expanded or extended memory or to disk if no such memory is available. If you delete this file, make sure your AUTOEXEC.BAT file does not contain the line SWAPDT /N or LH SWAPDT /N.
SWAPDT.SW3	Temporary file in the \PCTOOLS\DATA directory that stores information used by SWAPDT.COM.
SWAPSH.COM	File in the \PCTOOLS directory that swaps the resident portion of PC Tools Desktop to expanded or extended memory or to disk if no such memory is available. If you delete this file, make sure your AUTOEXEC.BAT file does not contain the line SWAPSH /N or LH SWAPSH /N.

File Name	Description
SWAPSH.SW3	Temporary file in the \PCTOOLS\DATA directory that stores information used by SWAPSH.COM.
SYSTEM.CPS	Backup file in the \WINDOWS directory that is a copy of the SYSTEM.INI file before Install modified it to include CP Backup and Commute.
TALK.CFG	File in the \PCTOOLS\DATA directory that is the Modem Telecommunications configuration file.
TALKONLN.CFG	File in the \PCTOOLS\DATA directory that is the online screen restore configuration file for Modem Telecommunications.
TELECOM.DBF	File in the \PCTOOLS\DATA directory that is a database file containing names and numbers used for Modem Telecommunications and Electronic Mail.
TEMPLOG.TMP TEMPLOG2.TMP	Temporary files in the \PCTOOLS\DATA directory that build History files at the end of the backup process.
TRANSFER.LOG	File created in the current directory that contains error and completion messages during background communications.
UNDEL.EXE	File in the \PCTOOLS directory that is the main Undelete for DOS program. PC Tools Desktop accesses this program.
UNDELETE.BAT	File in the \PCTOOLS directory that Install creates to run PC Tools Undelete program instead of DOS Undelete.
UNFORMAT.EXE	File in the \PCTOOLS directory that is the main Unformat program.
UNINSTAL.BAT	File in the \PCTOOLS directory which will uninstall PC Tools.
VERSION6.MNC	File in the \PCTOOLS\DATA directory that will make PC Tools Desktop Version 8 appear the same as PC Shell Version 6.
VERSION7.MNC	File in the \PCTOOLS\DATA directory that will make PC Tools Desktop Version 8 appear the same as PC Shell Version 7.
VIEW.EXE	File in the \PCTOOLS directory that is the main View program. This program is accessed by PC Tools Desktop, Undelete, FileFix, and FileFind.
VIEW.LIB	File in the \PCTOOLS\SYSTEM directory that is the View program's library of viewers.
VIEW.OVL	File in the \PCTOOLS\SYSTEM directory that is the View program overlay file. This program is accessed by PC Tools Desktop, Undelete, CP Backup, File Fix, and FileFind.
VIRULIST.CPS	File in the \PCTOOLS\DATA directory that contains the Virus list information displayed in CPAV.

File Name	Description
VIRUS.DAT	File in the \PCTOOLS\DATA required by EDISK to scan for boot-sector viruses.
VSAFE.COM	File in the \PCTOOLS directory that provides memory-resident virus detection capabilities. The level of protection is user-configurable.
VWATCH.COM	File in the \PCTOOLS directory that provides memory-resident virus detection capabilities.
WEEKLY.SET	File in the \PCTOOLS\DATA directory, preconfigured for use by CP Backup to create a full backup all files on the C: drive to the default backup device.
WIN.CPS	Backup file in the \WINDOWS directory that is a copy of the WIN.INI file before Install modified it to automatically load CP Scheduler, TSR Manager, and Central Point Launcher.
WIPE.CFG	File in the \PCTOOLS\DATA directory that is the configuration file for Wipe.
WIPE.EXE	File in the \PCTOOLS directory that is the main Wipe program. PC Shell accesses this program.
WNGRAFIC.DLL	File in the \WINDOWS directory that is the Windows graphics interface library.
WNSCHEDL.EXE	File in the \PCTOOLS directory that is the main CP Scheduler for Windows program.
WNTSR.DLL	File in the \WINDOWS directory that is the TSR Manager dynamic link library.
WNTSRMAN.EXE	File in the \PCTOOLS directory that is the main TSR Manager program. It allows messages from PC Tools TSR programs to appear in Windows.
WORDPROC.SET	File in the \PCTOOLS\DATA directory, used by CP Backup to select and back up data files created by popular word processing programs.

For a complete index of both PC Tools volumes, see the Master Index in Volume 2.

Central Point Software INC®

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